Benefit incidence analysis of priority public health services and financing incidence analysis of household payments for healthcare in Enugu and Anambra states, Nigeria

Onwujekwe O, Uzochukwu B, and Onoka C

June 2011

This paper is an output of the Consortium for Research on Equitable Health Systems (CREHS). Health Policy Research Group, University of Nigeria (Enugu), Nigeria.

Health Policy Research Group
University of Nigeria
Enugu-Campus, Enugu
Nigeria

ABOUT CREHS

The Consortium for Research on Equitable Health Systems (CREHS) is a five year DFID funded Research Programme Consortium that is made up of eight organisations based in Kenya, India, Nigeria, South Africa, Tanzania, Thailand and the United Kingdom.

It aims to generate knowledge about how to strengthen health systems, policies and interventions in ways which preferentially benefit the poorest. The research is organised in four themes: health sector reform, financial risk protection, health workforce performance and scaling up.

The consortium will achieve its aim by:
• working in partnership to develop research
• strengthening the capacity of partners to undertake relevant research and of policymakers to use research effectively
• communicating findings in a timely, accessible and appropriate manner so as to influence local and global policy development

For more information about CREHS please contact:
Consortium for Research on Equitable Health Systems (CREHS)
London School of Hygiene and Tropical Medicine,
Keppel Street,
London, UK
WC1E 7HT

Email: nicola.lord@lshtm.ac.uk
Website: www.crehs.lshtm.ac.uk

Acknowledgements

We are grateful to many people and groups that made the study and this report possible. We especially thank Kara Hanson, Di McIntyre, John Ataguba, Hyacinth Ichoku, IHPP, CREHS, policymakers, community leaders, and households.

Table of Contents

List of Tables and Figures 4
List of Acronyms 6
Executive summary 7

1. INTRODUCTION 11

2. METHODS 15

3. DATA ANALYSIS 18

4. RESULTS 21
SECTION I: Socio-economic and demographic characteristics 21
SECTION II: General health services use 24
SECTION III: Use of health insurance and analysis of the level and distribution of household healthcare payments 31
SECTION IV: Financing incidence analysis of out-of-pocket spending 34
SECTION V: Incidence of catastrophic healthcare payments 35
SECTION VI: Benefit incidence analysis of priority public health services 37

5. DISCUSSION 45

6. REFERENCES 53

List of Tables and Figures

Tables

Table 1: The distribution of health expenditure by socio-economic quintile and geographic zone in Nigeria 13
Table 2: Private health expenditure in Nigeria, 1998-2002 13
Table 3: Respondents' and households' socio-economic and demographic characteristics (household level data) 22
Table 4: Other socio-economic status quintiles and per capita household expenditure 23
Table 5: Breakdown of the household assets ownership by socio-economic status 23
Table 6: Occurrence of different diseases states/health conditions in households that required out-patient visits and in-patient admissions 24
Table 7: Providers visited for healthcare services 24
Table 8: Differential use of different providers by different population groups 25
Table 9: Reasons for not seeking treatment among those who reported illness 26
Table 10: Three main suggestions for improving provision, utilisation and financing of healthcare services 26
Table 11: Average monthly total household expenditures on out-patient and in-patient care and expenditure in public health facilities 26
Table 12: Monthly household health expenditures in public facilities by different population groups for the whole sample 27
Table 13: Monthly household health expenditure in public facilities for out-patient and in-patient care by different population groups, for those households which incurred expenditure > 0. 28
Table 14: Mean monthly household expenditures on treatment paid to different providers 28
Table 15: Mean monthly total household expenditure on treatment paid to different providers 29
Table 16: Mean monthly household expenditures for different diseases states/health conditions 30
Table 17: Household enrolment in any health insurance scheme 31
Table 18: Households covered in any health insurance scheme 32
Table 19: Number of respondents that used different financing mechanisms 32
Table 20: Differential use of different payment mechanisms by different population groups 33
Table 21: Mean monthly expenditures on treatment paid using different payment mechanisms by all households 33
Table 22: Mean monthly household out-of-pocket spending on treatment paid by different population groups 34
Table 23: Incidence of catastrophic expenditure at different thresholds for different services 35
Table 24: Number of households from different population groupings with catastrophic health expenditures 36
Table 25: Number of individuals that accessed free priority public health services by population groups 37
Table 26: Number of people from different population groups that accessed various free public health goods and services 38
Table 27: Benefit incidence of consumption of various free public health goods and services by urban/rural and gender (in Naira) 39
Table 28: Percentage of users of different free public health goods and services who made payments for them 40
Table 29: Expenditures on public health goods and services by urban/rural and state plus socio- 41

economic status
Table 30: Net benefits to individuals for services to different population groups 43

Figures

Figure 1: Concentration curves showing the socio-economic status distribution of out-of-pocket spending in relation to total household expenditure 35

List of Acronyms

ANC	Ante-natal care
ARVs	Antiretrovirals
ACT	Artemisinin-based Combination Therapy
BIA	Benefit Incidence Analysis
CBHI	Community-based Health Insurance
FIA	Financing Incidence Analysis
FP	Family Planning
IPD	In-Patient Department
ITN	Insecticide-Treated Net
LGA	Local Government Area
NHIS	National Health Insurance Scheme
NLSS	National Living Standard Survey
OOPS	Out-of-pocket Spending
OPD	Out-Patient Department
PCA	Principal Components Analysis
PHC	Primary Healthcare
PMD	Patent Medicine Dealer
PVHI	Private Voluntary Health Insurance
SES	Socio-economic Status
SSA	Sub-Saharan Africa

Executive summary

Rationale

There is a lack of information on socio-economic and other differences in the distribution of the benefits of free public health services and of the financing burdens associated with different financing mechanisms in health, particularly in terms of financial protection for the poorest and other vulnerable groups. This information is required by policymakers and programme managers so that they can develop and implement financial risk protection strategies that aim to reduce inequity in financial access to, and utilisation of, healthcare services by the poor and ensure that the poor and vulnerable groups are not impoverished by healthcare spending.

Objectives

The aim of the study was to generate new knowledge about the burden of different mechanisms for financing the use of health services by households, and to assess the distribution of the benefits from government expenditure on a set of priority public health interventions. This research was undertaken with the aim of using the findings to improve the equity of financing and provision of healthcare services in Nigeria. The specific objectives of the study were: to estimate the relative contributions of the major healthcare financing mechanisms at household level to the health expenditure in Enugu and Anambra states, Nigeria; to assess the financing incidence (based on socio-economic groups and rural-urban location) of the different financing mechanisms; to determine the level of catastrophic healthcare payments and their distribution across socio-economic groups; and to evaluate the benefit incidence (based on socio-economic groups, gender, rural-urban location) of a subset of publicly-funded priority health services.

Methods

Study area

The study took place in 2 selected Local Government Areas (LGA); 1 rural and 1 urban in each of Enugu and Anambra states respectively (total of 4 LGAs). Study sites were selected to try to capture the variety of major financing mechanisms operating at the household level.

Data collection

The study involved household surveys and document reviews. Interviewer-administered pre-tested structured questionnaires were used in household surveys. A one-month expenditure recall period was used in the household survey.

Data analysis

STATA and SPSS software packages were used to analyse the data. Financing incidence analysis (FIA) and catastrophic costs were assessed at the household level (n=4873). Our data showed that direct out-of-pocket spending (OOPS) dominates household expenditure on health. On the basis of this it was chosen as the main focus of the FIA. To examine the Benefit Incidence Analysis (BIA) the data from all individuals in the households were used (n=22,169). The frequency distributions of the variables by socio-economic status (SES), rural-urban location and gender (depending on the research objective) were calculated and the chi squared (Chi^2) test for trend analysis for statistical differences across the states was applied.

Principal components analysis (PCA) was used to create a SES index using information on the households' ownership of some assets, together with the weekly household cost of food. The index was used to divide the households and individuals into SES quintiles respectively. Concentration indices were calculated for all SES differences.

Analysis of the level and distribution of healthcare payments

The average expenditure by households on out-patient visits and in-patient stays were calculated. The comparisons of healthcare expenditure levels were disaggregated by SES, gender, and location (urban/rural). In addition, data were collected and analysed on: levels of enrolment; use of various financing mechanisms; SES; and geographic differences in the use of different health financing mechanisms.

Financing incidence of out-of-pocket spending

The absolute amounts of expenditure through the different financing mechanisms were calculated. However, because of its dominance as a financing mechanism, FIA was limited to OOPS. To assess the equity of the distribution of out-of-pocket payments, the concentration index was used. Concentration curves of OOPS were plotted, using the Lorenz curve, of total household expenditure to show the distribution of the burden of OOPS by SES compared with total household expenditure. The Kakwani index was calculated to examine the overall progression or regression of OOPS.

Incidence of catastrophic health expenditure

A number of different indicators and threshold levels were explored to determine the incidence of catastrophic health expenditure. A threshold of 40% of non-food expenditure was used in order for the results to be comparable to the international literature for the main interpretation of catastrophic spending.

Benefit incidence of priority publicly provided health services

The BIA focused on a set of priority public health services that are supposed to be provided free of charge in the public sector. The key steps in calculating benefit incidence guided the analysis. These were: determine the level of utilisation of the goods or services; group users by socio-economic and rural-urban categories; determine the unit cost for the service; and multiply the net unit cost by group service utilisation to determine group-specific benefits. Information on unit costs of services was obtained from the Ministries of Health at the Federal and state levels. Subsidies for different services were then aggregated. In addition to individual level analysis, analysis was also conducted by household. The net benefits were calculated by subtracting payments made for services from the value of benefits.

Results

General health service use

- Interviews were conducted with 4,873 households (2,483 urban and 2,390 rural). Data were collected on 22,169 individuals residing in the households.
- Malaria was the major health condition that required out-patient department (OPD) visits and in-patient department (IPD) stays. Hypertension was the most common non-communicable disease that required OPD and IPD treatment.
- Patent medicine dealers (PMDs) were the most commonly used providers of healthcare services (41.1%). They were followed by private hospitals (19.7%) and pharmacies (16.4%). There were inequities in use of the different providers. The rural dwellers and poorer SES groups mostly used low-level and informal providers.

- The main reasons that people who needed healthcare services did not seek care were that the condition was not serious enough or they could not afford the cost of services.
- The three main suggestions that respondents gave for improving the provision, utilisation and financing of healthcare services were: provision of free services; subsidising healthcare; and construction of more public hospitals.

Analysis of healthcare payments at household level

- The average household health expenditure per month was 2,354 Naira (US$19.6). The average monthly household expenditure on out-patient care was 1,809 Naira (US$15.1), whilst it was 610 Naira for IPD services (US$5.08). Higher expenditure was incurred by urbanites, residents of Anambra state and the better-off SES groups.
- Household health expenditure was mostly paid through OOPS and the average monthly household OOPS was 2,219 Naira (US$18.5). There was almost complete absence of health insurance.
- The average household expenditure per month in public hospital facilities was 661 Naira (US$5.51), whilst in private hospitals it was 980 Naira (US$8.17). The lowest monthly household average expenditure was incurred by herbalists (3 Naira or US$0.02) and PMDs (35 Naira or US$0.29).
- Average monthly household expenditure for communicable diseases such as malaria was quite high 1,401 Naira (US$11.67) for OPD care and 12,442 Naira (US$103.7) for IPD services for communicable diseases).
- Enrolment rates in health insurance were very low; only 51 (1.0%) of the households had a member that was enrolled in a health insurance scheme. The primary enrolees were mostly adults, who were mostly enrolled and covered by the National Health Insurance Scheme (NHIS). The number of people that were covered by another household member's health insurance scheme was also very low, and most of this coverage was with respect to NHIS.

Financing incidence analysis of out-of-pocket spending

- 3,150 (98.8%) payments were made using OOPS, 9 (0.3%) using reimbursement by employers, 1 (0.03%) through private voluntary health insurance (PVHI), 9 (0.3%) using instalment and 14 (0.44%) through other payment mechanisms. No payments were reportedly made using NHIS or Community-based health insurance (CBHI).
- There were variations in the use of payment mechanisms by different population groups.
- The Kakwani index for financing incidence of OOPS was -0.18 showing that OOPS was regressive.

Level of catastrophic healthcare payments

- The overall incidence of catastrophic expenditures was 27% at the 40% threshold level.
- The poorer SES quintiles and rural dwellers incurred a higher level of catastrophic health expenditures.

Benefit incidence analysis of priority public health services

- It was found that 3,281 individuals out of the 22,169 in the households consumed wholly free services.
- There was a greater consumption of free services by urbanites, residents of Anambra state, females and poorer SES quintiles.
- Immunisation services were the most commonly accessed free services (2,992 individuals). This was followed by insecticide-treated nets (ITNs) (313 people) and free antimalarial drugs (61

people). Only one person accessed free HIV treatment services. The results also show that free ante-natal care (ANC), childbirth services and TB treatment were accessed by 22, 3 and 7 individuals respectively.

- The average value of benefits of accessing immunisation services per individual was 440 Naira. Other values were 96 Naira (ITNs), 79.4 Naira (TB treatment), 49 Naira (ANC), 23 Naira (antimalarial drugs), 7 Naira (childbirth services), 0 Naira (antiretrovirals (ARVs)), and 0 Naira (family planning (FP)). A value of 0 implies that nobody accessed the service.
- Overall, the better-off SES quintiles benefited more from the immunisation services, ITNs and ANC services, whilst the poorer SES quintiles benefited more from free antimalaria drugs and treatment for TB. In the urban area, the distribution of benefits was more equitable for immunisation services, ITNs and ANC. In the rural area the distribution of benefits was more equitable for antimalarial drugs, childbirth services and TB treatment. In absolute terms, males received a greater share of the benefits of immunisation services relative to their population share, whilst females received more of the benefits for the remaining goods and services.
- High levels of payment were observed for immunisation services, ITNs, antimalarial drugs, ANC, and childbirth services, all of which are supposed to be provided for free.
- Compared to rural dwellers, more urbanites spent money on most public health services except for treatment of TB. Females and residents of Enugu state were more likely to spend money on most public health services compared to males and those from Anambra state respectively. However, it is not clear whether these were informal payments or that people chose to receive the services from the private sector where they were charged fees.
- The average expenditure on public health services were 613 Naira, 76 Naira, and 4 Naira for antimalarial drugs, immunisation services, and ITNs respectively. Other average expenditures were 486 Naira (childbirth services), 151 Naira (ANC) and 3.9 Naira (TB treatment).
- In contrast to the rural area, more money was spent on all services, except for childbirth services, in the urban area. There was also greater expenditure in Enugu state and amongst better-off SES quintiles.
- The net benefits were significantly higher statistically for the rural area, Anambra state and poorer quintiles, in comparison to the urban area, Enugu state, and better-off quintiles.

Conclusion

The high levels of out-of-pocket expenditure in the study population indicate a lack of financial risk protection for healthcare in the study areas. Those that experienced the highest burden of health expenditure were the rural dwellers and those from the poorest socio-economic quintile. OOPS is still the principal payment mechanism for healthcare and accounts for the very high levels of catastrophic spending that were found in the study. Overall, the distribution of OOPS was regressive, as measured by the Kakwani index. In addition, the low and inequitable coverage of priority public health services – that are supposed to be delivered free of charge – suggests that there may have been illegal payments which further hindered access to the public health services. People expressed a desire for increased free public health services, subsidised healthcare services, and the construction of more public hospitals. Hence, policymakers and programme managers should introduce health reform mechanisms to develop, implement and scale-up financial risk protection initiatives in the two states. In addition, reforms should identify constraints which impede the equitable distribution and access of free or subsidised public health services for the general population especially poor people and rural dwellers. Reforms should also ensure that priority healthcare services such as immunisation services are increased become more equitable in terms of coverage.

1. INTRODUCTION

Globally, three main options exist for financing health: (1) a government budget allocation; (2) out-of-pocket payments; and (3) prepayment schemes or health insurance. Healthcare systems, and particularly those in the developing world, depend on a mix of financing mechanisms rather than one alone. For example, user fee systems are commonly implemented in the context of existing tax-funded systems. CBHI schemes are frequently initiated in settings where there are already substantial user fees (Bennett and Gilson, 2001). Health financing mechanisms generate revenue for the health sector and if well-designed, may also encourage efficient and high quality of care from providers.

An important aim of financing mechanisms is to prevent individuals from falling into poverty because of catastrophic medical expenses. A good financing mechanism protects and improves the health status of individuals and populations by ensuring financial access to essential public and personal health services (Schieber et al., 2006). In most sub-Saharan African countries, the current healthcare financing from government tax revenue is relatively low. Particularly in relation to the target of dedicating 15% of total government expenditure to the health sector, agreed to by the African Heads of State in Abuja in 2001 (McIntyre et al, 2005). User fees, exemptions and various forms of health insurance schemes are the main healthcare financing mechanisms, with households mostly using OOPS to pay for healthcare. The average share of OOPS as a financing mechanism is very high in Africa. In Nigeria more than 65% of total health expenditure is paid for through OOPS (Soyibo et al., 2005).

User fees have been a contentious source of financing in low-income country settings. In most cases they have occurred spontaneously as a result of: the scarcity of public financing; the prominence of the public system in the supply of essential healthcare; the government's inability to allocate adequate financing to its health system; the readiness of the poor and the better-off to pay fees as a way of reducing the travel and time costs of alternative sources of care; the low salaries of health workers; the limited public control over pricing practices by public providers; and the lack of key medical supplies such as drugs (Gottret and Schieber, 2006). When introducing or increasing user fees, national governments were typically pursuing the objectives of revenue generation and better quality public sector health services. In particular, through improvements in the availability of medicines at facilities (Nolan and Turbat, 1995). User fees, in the form of co-payments, are also used in many health insurance programmes, social or private, with the rationale of deterring over-use of services. However, the experience of user fees in African countries has been dismal especially with regards to generating revenue. For example, fees have on average tended to generate revenue of less than 5% of total operating costs (Oxfam, 2009; Creese, 1991).

Both user fees and CBHI schemes will adversely affect the welfare of the very poor unless there are effective exemption mechanisms in place (Bennett and Gilson, 2001**)**. A study in Ghana found that almost half of the clients interviewed who were eligible for exemptions had in fact paid for services (Garshong et al., 2002). Research has also highlighted that the poor very seldom receive exemptions (Mills, 1991).

Overview of health financing in Nigeria

One of the goals of the Nigerian National Health Policy is to fund the health sector from budgetary sources however it also recognises additional options for raising revenue such as health insurance schemes and direct financing by employers. Nigeria introduced user fees for government health services within the framework of the Bamako Initiative revolving drug funds (Uzochukwu et al, 2002; Ogunbekun

et al., 1996). The introduction of user fees in Nigeria was arguably in response to the severe difficulties in financing health services, like in most of sub-Saharan Africa. Government health budgets declined in real terms due to macroeconomic problems at a time when demand for health services increased, partly because of population growth and successful social mobilisation. Consequently, African Heads of State agreed in the Abuja declaration to set a target of 15% of government budgets to be directed to the health sector (Organisation of African Unity, 2001).

Currently, healthcare in Nigeria is financed from a mixture of budgetary allocations from: the Federal, State and local governments; OOPS; external development funding; grants from corporations and charities; and a small but growing pool of social health insurance contributions (Federal Ministry of Health, 2009). Government budgets are derived from general tax revenue including value added tax. There is no data about the contributions of the various taxes to health financing. The public health sector is financed with an allocation from the Federation Account's general revenue, apportioned to the various levels of government based on an agreed formula. However, about 70% of the total health expenditure is from OOPS therefore making services inaccessible, especially to the poor (Federal Ministry of Health, 2009). Safety nets for the poor are non-existent and the NHIS is currently limited to the formal public sector (Federal Ministry of Health, 2009).

Increasing public health expenditure does not automatically translate into better outcomes. In Nigeria skewed resource allocation towards urban-based hospital services, and services that tend to be used by the better-off, have often hindered efforts to improve health outcomes as the additional public spending does not reach those most in need. The money spent gets thinly spread amongst the population segments that need subsidies the most. As a result, with poorly targeted and ill-functioning exemption mechanisms, the poor and the vulnerable are trapped in catastrophic OOPS. Without a meaningful safety net, they fall further into chronic poverty (World Bank, 2003; Soyibo, 2003).

The 2004 National Living Standard Survey (NLSS), a representative sample of more than 19,000 households, indicated that OOPS on out-patient care[1] was about US$22.5 per capita, which accounted for about 9% of total household expenditure. This is one of the largest shares in low-income countries across the region and even globally. The 2004 NLSS also provides evidence on the impoverishing effect of healthcare payments on households. On average, about 4% of households are estimated to spend more than half of their total household expenditure on healthcare and 12% of them are estimated to spend more than a quarter. The survey found large differences in the total burden of health expenditure both across socio-economic quintiles and geographic zones (National Bureau for Statistics (NBS), 2004). Table 1 shows the distribution of health expenditure by socio-economic quintile and geographic zone (Velenyi, 2005).

[1] Estimates included out-patient care, transportation, and medications but excluded hospitalisation as the latter was not possible to annualise from over a two-week survey data.

Table 1: The distribution of health expenditure by socio-economic quintile and geographic zone in Nigeria

Socio-economic quintiles	Poorest	II	III	IV	Richest	Total
Health expenditure as % of per capita household expenditure	6.9%	6.7%	7.6%	8.8%	13.4%	8.7%
Per capita annual health expenditure (Naira)	528	957	1,572	2,736	9,200	2,999
Per capita annual health expenditure (US$)	4	7.2	11.9	20.6	69.4	22.6
Zones	**South South**	**South East**	**South West**	**North Central**	**North East**	**North West**
Health expenditure as % of per capita household expenditure	9.3%	10.9%	8.2%	9.7%	9.5%	6.7%
Per capita annual health expenditure (Naira)	3,338	5,488	3,170	2,764	2,426	1,928
Per capita annual health expenditure (US$)	25.2	41.4	23.9	20.9	18.3	14.6

Source: NBS, 2004 (based on NLSS 2004).

Presently, public expenditure funded through general tax revenue in Nigeria accounts for only 20-30% of total health expenditure. This leaves 70-80% of payments to other sources, with the bulk taking the form of private payments (Soyibo et al., 2010). Reliance on this non-pooled financing instrument and the related absence of risk sharing transfers, the financial burden on the poor, and the absence of exemption mechanisms and pre-paid instruments is largely responsible for impoverishing health expenditure (Velenyi, 2005; Preker, 2005).

Private expenditure on health has remained very high in Nigeria. The excessive private share of expenditure is all the more alarming as most of it takes place via non-pooled OOPS, the most regressive form of payment (Soyibo et al., 2004, 2010; Velenyi, 2005). Households and firms have been shouldering around 70% of total health expenditure (see Table 2 below) and 90% of these private expenditures are non-pooled.

Table 2: Private health expenditure in Nigeria, 1998-2002

Private health expenditure	1998	1999	2000	2001	2002
Private sector expenditure on health as % of total expenditure on health	73.9	70.9	66.5	68.6	74.4
Private households' OOPs as % of private sector expenditure on health	95.0	94.8	92.7	91.4	90.4

Source: Soyibo et al., 2005

The high level of non-pooled private expenditure makes healthcare potentially inaccessible to many people, and there is increasing interest in shifting to risk pooling financing mechanisms in Nigeria. With 70% of the population living below the $1-a-day poverty line (World Bank, 2003), this excessive reliance on non-pooled private payments curbs healthcare utilisation. It also exacerbates already inequitable access to quality care, and exposes both households and providers to the financial risk of expensive illness at a time when there are both affordable and effective ways to address such problems even at low income levels through various financing intermediaries and instruments (Preker, 2005).

Expanded access to risk-pooling financing mechanisms such as health insurance would ensure better financial risk protection for people and decrease the incidence of catastrophic health expenditures. At

present there are two main risk-pooling mechanisms in Nigeria: the NHIS and community-based health insurance. The objectives of the NHIS are to ensure access to good healthcare without financial hardship to families and to limit the rise in cost of health services; to maintain a high standard of healthcare delivery services and to improve and harness private sector participation in the provision of care; to promote equity in the distribution of health services; and to encourage appropriate use of institutions at the different levels of healthcare delivery (MEC, 2004).

The NHIS became functional in 2005 but coverage is limited to Federal Government employees and their dependents. Employees are supposed to pay 5% of their salary and employers 10% of their employees' salaries as a premium. The benefits package covers both out-patient visits and some in-patient services. The insurance covers the spouse and up to four other members of the beneficiaries' household under the age of 18 years. The NHIS covers about 5% of Nigeria's population.

In Anambra state, CBHI schemes are an important means of ensuring financial risk protection for the people, especially since they target the population segments with the greatest need for healthcare services. Membership of CBHI is comprised of individuals and households in a community, with a minimum of 500 people required to form a user group (Anambra State Ministry of Health, 2004; Uzochukwu et al., 2009). The individuals pay a flat rate monthly, yearly or in convenient instalments and the scheme pays the government for the use of the facilities, and the healthcare providers offer healthcare services to the scheme members. In addition, the government match the premium contributions paid by the households to the scheme, as well as provide subsidy to healthcare providers in the form of salaries (Uzochukwu et al., 2009). The scheme is designed to mobilise extra local resources by ensuring full participation by local communities in the decision-making process and by giving the community a dominant role in mobilising, pooling, allocating and managing healthcare resources (Katchy, 2003). The scheme is currently operational in 10 out of the 24 Local Government Areas (LGAs) in the state.

Whilst there is no CBHI in Enugu state, the quality of publicly provided healthcare services was improved with the general tax funded District Health System. User fees are still charged for most services and direct OOPS is the predominant form of financing. The DHS was at the heart of the health reform process in Enugu state, which intended to make good quality and affordable services readily available to people so as to reduce their healthcare expenditure – especially on inappropriate and low quality services. The DHS integrates primary healthcare (PHC) and secondary healthcare under a single management and serves a defined population within a geographical area.

National health financing systems are generally expected to be pro-poor if healthcare targets are to be met. Such systems should therefore incorporate three important dimensions: they should ensure that contributions to costs of healthcare are in proportion to different households' ability to pay; protect the poor from financial shocks associated with severe illness; and enhance the accessibility of services to the poor (Bennett and Gilson, 2001). Such systems can only be achieved if healthcare planners are well-informed about the distribution of the benefits of public subsidies and of the burden of paying for health services. However, there is a paucity of existing information about socio-economic and other differences in the benefit and financing incidence of the different financing mechanisms in health, especially with regards to financial protection of the poorest and other vulnerable groups. This information is important if the health-related Millennium Development Goals are to be met in Nigeria.

Aim

The aim of the study was to generate new knowledge about the burden of different financing mechanisms on different population groups, and to assess the beneficiaries of government expenditures on public health interventions.

Specific objectives

1. To estimate the relative contributions of the major healthcare financing mechanisms to household health expenditure in Enugu and Anambra states, Nigeria.
2. To assess the financing incidence (based on socio-economic groups and rural-urban location) of OOPS.
3. To estimate the burden of out-of-pocket payments to households, and the incidence of catastrophic healthcare payments.
4. To evaluate the benefit incidence (based on socio-economic groups, gender, rural-urban location) of a set of publicly-financed public health interventions.
5. To use these findings to improve the financing and provision of healthcare services in Nigeria.

2. METHODS

The study involved household surveys and document reviews. Interviewer-administered pre-tested structured questionnaires were used in household surveys, with a one-month expenditure recall period.

Conceptual framework

Three different methods for equity analysis were employed in this research: FIA; analysis of the incidence of impoverishing or catastrophic payments for healthcare; and BIA.

FIA typically measures the incidence of consumer payments for health in terms of different healthcare financing mechanisms. It compares the distribution of the burden of healthcare financing with the distribution of overall economic resources, in order to determine whether health financing arrangements are progressive (poorer households pay a lower share of their total income/expenditure on health) or regressive (poorer households pay a higher share of their total income/expenditure on health). The distribution of health financing contributions paid via taxation, insurance contributions and OOPS are typically examined separately (Ataguba, 2009). In the FIA in this study, there was an initial examination of the distribution of different financing mechanisms before focusing on household healthcare payments using OOPS for detailed analysis since more than 70% of all health spending is paid using OOPS in Nigeria. The financing mechanisms that were explored in addition to OOPS were payments with reimbursement by employers, NHIS, CBHI, PVHI, payment in kind, and payment by installment.

Linked to FIA of OOPS was an analysis of catastrophic expenditures due to household healthcare payments and more specifically due to OOPS, which was used to pay for more than 95% of household healthcare expenditures in this study. The existence of catastrophe is enhanced by the lack of financial risk protection, where people currently pay primarily out-of-pocket for health expenditure (Feder et al., 1987). As described by Xu et al. (2003), as the volume of total health expenditure met by out-of-pocket payments increases, the range of catastrophic payments also increases (Onwujekwe et al., 2010). Gertler and van der Gaag (1990) suggest that, typically, the price elasticity of demand for healthcare services exceeds unity at prices higher than 5% of non-food expenditure, implying that at this level financing healthcare would become a heavy burden for a typical household. However, many household

surveys suggest that the average household's contribution to per capita health expenditure in most economies is about 3-5% of its income (Russell, 1996). Ranson (2002), Pradham and Prescott (2002), Wagstaff and van Doorslaer (2003), and O'Donnell et al. (2005) used a threshold of 10% of total expenditure. Castillo-Riquelme at al. (2008) used a threshold of 10% of household income and 40% of non-food income. According to Feder et al. (1987), expenses of 10 or 20% of income are typically defined as in the catastrophic range and they used a threshold of 15 to 20% of income in their study. However, one could argue that any health expenditure, to some very poor households in Nigeria especially those already living below the poverty line, are catastrophic. At this level of poverty, households may not have money to spend on any household need aside from food. In the presence of the high incidence of poverty in Nigeria, with more than 50% of the people living below the poverty line, most health expenditure is catastrophic and the threshold for assuming catastrophe may be less than 2% (Ichoku and Fonta, 2006; Onwujekwe et al., 2009).

BIA is a powerful tool for assessing how efficiently public spending is targeted to the poor and who benefits from public expenditure on education, health, etc. BIA became an established approach through the work of Meerman (1979) on Malaysia and that of Selowsky (1979) on Colombia. Analysing benefit incidence of public sector expenditure is tantamount to testing fiscal policy performance with respect to reduced poverty and inequality. Recipients are usually distinguished by their relative economic position, but the geographic distribution of spending can also be examined, as can the distribution across characteristics such as ethnicity and age (O'Donnell et al., 2007). A number of reasons can be cited as to why the distributional outcomes from public funds are important for government. Increasingly, governments are using their discretion over spending to alleviate poverty and address equity objectives. In this respect the Nigerian Government has made some strides by increasing public resources channelled towards social and community services, and establishing social investment funds such as the Universal Basic Education and the NHIS. Another factor that justifies BIA in Nigeria is that households diverge in terms of their abilities to access and utilise social services. Often it is households in the upper income echelons which reap larger benefits from public spending programmes. Such variations could stem from wide ranging factors such as urban bias in concentration of public services to possible high opportunity costs incurred by poor households in accessing healthcare services.

In this study, BIA focused on a limited set of public services that are supposed to be provided free of charge. The framework for BIA looks at the following key elements: (1) Identification of users on the basis of household surveys; (2) Aggregation of users into groups of interest (commonly defined by income levels, region, urban/rural location, poor/non-poor, occupation, ethnicity, etc.); (3) Estimation of the value of the benefit: typically estimated as the cost of providing the service, transfer or subsidy; (4) Account of household spending, in case of out-of-pocket expenditure to access the benefit; and (5) Examination of the distribution of net subsidies. In cases of financial transfers, the income groups can be defined pre- or post-transfers, which will yield different results. BIA requires: (1) individual or household-level data from household surveys on welfare and on the use of service and receipt of public spending; and (2) information on unit costs of public expenditure to estimate the value of the benefits. Analysis is usually undertaken at the individual level.

Research Area

The research was undertaken in 4 selected Local Government Areas (LGAs); 1 rural and 1 urban LGAs from Enugu and Anambra states respectively (2 LGAs per state). The two state capitals were selected as the urban LGAs and two rural LGAs were selected where it was believed that all the major financing mechanisms were operational.

Enugu is the capital city of Enugu state. There are 17 LGAs in the state, of which 5 are largely urban. Enugu state has an estimated population of about 3,100,000 (projected from 1991 census). Anambra state has a population of 4,054,824 (projected from 1991 census). Its capital city is Awka, and it is comprised of 21 LGAs, 6 of which are urban. Each state capital has a tertiary hospital and each urban LGA has a public general hospital. There are health centres in all rural LGAs. The private sector is represented by: private hospitals; clinics; pharmacies; PMDs; and mission hospitals, all of which are found in both states.

Data Collection

For the household surveys, a pre-tested questionnaire was administered by trained field workers to a minimum sample of 4,800 randomly selected householders from 4 LGAs (1,200 people per LGA). The sample size per state was determined using: the estimated number of households in the urban and rural LGAs per state – which is approximately 1 million (with an average household size of 5 people); a power of 80%; 95% confidence level; and 1% incidence of use of the rarest health financing mechanisms, which were the NHIS and CBHI (Onwujekwe, 2004). Therefore, the key consideration for sample size calculation was use of the rarest financing mechanism. The calculations yielded a minimum sample size of 1,519 households per state and 1,166 per rural LGA. The latter was used as the basis for determining sample size because of the plan to also analyse at the LGA level in addition to analysing the aggregated data. Hence, 1,200 households were selected from each study LGA. The sample size was increased from 1,166 to 1,200 so as to account for refusals. The EPI-info software programme was used to calculate the sample size.

In each selected household, one woman (the primary care giver) – or in her absence – the male head of the household was interviewed. The sample size was adequate to analyse differences between urban and rural areas in a given state, and differences between urban areas or rural areas across states. It was also adequate to analyse differences between the two states and for a pooled analysis of all the data.

A one month recall period was used to collect information on household healthcare and other expenditure, as well as mode of payment for healthcare expenditure on out-patient visits. The one month recall period reduced the incidence of recall bias that would occur if longer periods were used. However, a six-month recall period was used for collecting data on in-patient admissions and expenditure, because such events are rarer than out-patient visits.

3. DATA ANALYSIS

STATA and SPSS software packages were used to analyse the data. Household-level data were used to analyse the level and distribution of household healthcare payments, financing incidence of OOPS, and catastrophic costs. Individual-level data were used for the service-specific BIA. The data set for the households reports on 4,873 households, whilst the data for individuals reports on 22,169 people. The frequency distributions of the variables by SES, rural-urban location, and gender (depending on the research objective) were calculated and chi-squared (Chi^2) tests of trend analysis for statistical difference across the states were undertaken. The Kruskal-Wallis non-parametric test, which reports a Chi^2 statistic, was used to compare differences in means of continuous variables. The Kruskal-Wallis is the non-parametric equivalent of ANOVA.

Specific data analysis for the study objectives

Measurement of household socio-economic status

Principal components analysis (PCA) was conducted using STATA (STATA Corporation, 1998) to create a SES index (Filmer and Pritchett, 2001) using information on the households' ownership of a: radio; bicycle; motorcycle; car; refrigerator; generator; kerosene lamp; together with the weekly household cost of food. A PCA model was estimated over the complete dataset for the household data and another estimated for the data on individuals. The SES index was recalculated for the individual data using information about their household assets. Hence, individuals from the same households still had the same SES weight. The index was used to divide the households and individuals into five equal sized SES groups (quintiles). The first principal component of the PCA was used to derive weights for the SES index (Onwujekwe et al., 2004). The highest weight was given to ownership of a fridge (0.53), followed by ownership of a television (0.50), ownership of a car (0.41), ownership of a generator (0.39), ownership of a radio (0.28), per capita food value (0.20), ownership of a bicycle (-0.15), ownership of a motorcycle (0.08), and ownership of a kerosene lamp (-0.03). The quintiles were Q1 (most poor); Q2 (very poor); Q3 (poor); Q4 (less poor); and Q5 (least poor).

Households' total expenditures were also estimated and used to divide the households into quintiles. The correlation of SES index based on household assets and that based on expenditure was 50%. The asset-based index was used for all detailed analysis. This decision was made because some of the variables to be analysed were expenditure items, and the asset-based index seemed more reliable as it is based mostly on verifiable, objective and observable assets and less dependent on the reports of the respondents, with the exception of food expenditure. Some critical analysis was also undertaken using both SES measures and their results were compared for convergence. The measure of inequity in household healthcare payments was the concentration index (Wagstaff et al., 1989, 1991). The concentration index varies from -1 and +1. A negative sign denotes that the distribution of the variable of interest favours the poor, and if positive, it means that it favours the least poor.

Analysis of general health service use

The levels of occurrence of various health conditions/diseases were calculated, and the types of services that were accessed and providers that people visited were analysed. In addition, the level of healthcare expenditure on various health conditions/diseases and providers were estimated. The specific indicators were: level of health service use per month for household members (number of OPD visits and in-

patient department (IPD) admissions) aggregated to the household level; and total monthly health expenditure per household.

Analysis of the level and distribution of household healthcare payments

The mean monthly expenditure per household was calculated and disaggregated by financing mechanism. In addition, the expenditures were compared between different SES groups, urban and rural dwellers, and between males and females. The specific indicators were: level of monthly household expenditure on healthcare; level of enrolment and use of various financing mechanisms in the states; socio-economic distribution of the use of different financing mechanisms; membership of the financing schemes; reasons for enrolling and prepaid monthly amounts; rural-urban differences in the use of different health financing mechanisms; SES and rural-urban differences in enrolment in NHIS and CBHI; average monthly household expenditure across different healthcare providers by different financing mechanisms; and average household expenditure on different diseases and health conditions.

Financing incidence analysis of out-of-pocket spending

Due to the dominance of OOPS as a financing mechanism, FIA was confined to its distribution. The specific indicators were: level of monthly household OOPS on OPD and IPD; SES differences in OOPS by different providers; rural-urban differences in OOPS; and Kakwani index for financing incidence of OOPS.

Analysis of catastrophic spending

Health expenditures are said to be "catastrophic" when they risk sending a household into, or further into, poverty. This is usually measured by setting a reference or standard, and counting the number of households for whom their level of health expenditure in a given period can be said to be catastrophic. Several thresholds have been proposed by different researchers in various settings. Xu et al. (2003), used a threshold of 40% of "capacity to pay" which was defined as income after subsistence needs are met, in practice this amounts to income minus food expenditure. For this study two scenarios were explored for determining incidence of catastrophic health expenditures and these were: monthly household health expenditure as a share of monthly non-food expenditure (>40%, >10% and >5%); OOPS on IPD and OPD in public facilities /monthly non-food expenditure (>40% and >5%). Due to the high incidence of poverty in Nigeria, a definitive catastrophic threshold of 5% for non-food expenditures should ideally be used. However, the threshold of 40% was used in order for the results to be comparable to international literature for the main interpretation of catastrophic spending.

For equity analysis, an urban–rural distinction and a SES index were used to examine the systematic differences in catastrophic costs. For SES, this was done using both asset index and total household expenditures as the basis. The specific indicators were: monthly household health expenditure; monthly healthcare payments of each household as a proportion of monthly total household expenditure; and incidence of catastrophic healthcare payments.

Benefit incidence analysis of free priority public health services

The standard methods for BIA were employed: use micro-data to estimate utilisation of the various services; weight the utilisation of different services by their cost in order to arrive at a total "value" of public subsidies (net of payments); and assess the distribution of these subsidies. The priority public health services that are supposed to be provided free of charge and that were examined in this study were: immunisation services, ITNs, artemisinin-based combination therapy (ACT) for children and pregnant women; ANC in PHC; normal delivery in PHC centres; antiretroviral drugs in public facilities; FP: and treatment of tuberculosis. The questionnaire did not differentiate between public and private service provision because the free services are almost entirely provided by the public sector.

The unit costs of the services were gathered from several sources, which were: (1) unit standard hospital charges in the two states; (2) unit fees for the conditions as set by the NHIS; and (3) unit costs calculated from accounts' data of Ministries of Health, development partners and from literature. The different perspectives for deriving unit costs were used where appropriate. Ideally, a detailed costing of the services work would have been undertaken as part of this research. However, due to a lack of resources (personnel, time and money) to undertake such a huge exercise, the study used the next best options (1 to 3) where appropriate. The value of benefits for the different goods and services were arrived at by multiplying the unit costs by group service utilisation (utilisation rates). In addition, the benefits accruing to individuals belonging to the same households were aggregated to determine whether some SES households were capturing more benefits than others (calculating the total value of services accessed by the households belonging to different SES groups). The value of benefits in this study was determined by multiplying the number of users by the unit costs. The data from the free priority public health services were aggregated for analysis and also analysed individually. The data were also analysed to show whether use of services was proportional to need. This was achieved by determining the proportion of different population groups in the sample and then by calculating the relative benefits that the different population groups accrued.

Box 1: Unit costs and the sources of data (all 2005 prices)

500 Naira for immunisation: National Programme on Immunisation/Anambra and Enugu Ministries of Health (A-EMOH); Wolfson et al. (2008).
1,000 Naira for insecticide-treated nets: market survey of average price of ITNs, National Malaria Control programme; A-EMOH.
1,000 Naira for ACT: market survey of average price of ACTs; A-EMOH.
2,000 Naira for ANC: average cost; A-EMOH/NHIS.
7,500 Naira for normal delivery: average cost; A-EMOH/NHIS.
10,000 Naira for antiretroviral drugs: official price of subsidy fixed by the Federal Government of Nigeria
1,000 Naira for FP: market survey of average price; A-EMOH.
25,000 Naira for treatment of tuberculosis: average cost of treatment; A-EMOH.

Note: 120 Naira = US$1.00.

The following indicators were calculated:

- level of use of priority free public health services by individuals;
- level of use of priority subsidised public health services by individuals;
- amounts spent on priority free or subsidised health services;
- unit subsidies for different healthcare services;
- benefit-incidence ratios of different free priority public health services;
- amount of benefits accruing to households belonging to different SES groups;
- amount of money that people paid for supposedly free services;
- net benefits.

The net benefits were calculated by subtracting payments made for the services from the value of benefits. However, not all individuals that benefited from free services made payments and conversely, not all people that made payments accessed free services. Hence, the aggregate net benefit rather than net benefit for individual services gives a better picture of BIA.

4. RESULTS

SECTION I: Socio-economic and demographic characteristics

A total of 2,446 and 2,472 households were interviewed in Enugu and Anambra states respectively. There were 2,390 rural households and 2,483 urban households. Data were obtained for 11,047 individuals in Enugu state and 11,169 in Anambra state, and for 12,744 and 9,472 urban and rural individuals, respectively. The overall average household size was 4.5 people, which was the same in the two states but lower in the rural areas (Table 1). The mean age of the respondents was 41.6 years. As expected, the majority of the respondents were female and had some formal education. Household weekly food expenditure was 3,143 Naira from the combined data, but it was higher in Enugu state and the urban areas compared to Anambra state and the rural areas. Annual household non-food expenditure was 95,029 Naira, but again it was higher in Enugu state and the urban areas compared to Anambra state and the rural areas. Most of the households owned functional radios and kerosene lamps. Bicycles, motorcycles, cars, and generators were the least commonly owned household assets. The respondents from the urban areas and from Enugu state belonged to better-off SES quintiles when compared with those from the rural areas and from Anambra state.

Table 1: Respondents' and households' socio-economic and demographic characteristics (household level data)

	Urban N= 2,483 (51%)	**Rural N= 2,390 (49%)**	**Enugu N= 2,446 (50.2%)**	**Anambra N= 2,427 (49.8%)**	**Combined N= 4,873**
No. of household residents: Mean (SD)	5.1(2.0)	3.9 (1.9)	4.5 (2.0)	4.5 (2.0)	4.5 (2.0)
Age of respondent: Mean (SD)	37.3 (14.0)	46.0 (15.6)	42.2(15.14)	41.1 (15.7)	41.6 (15.4)
Sex (Female): n (%)	2,180	2,203	2,187	2,196	4,383 (89.9)
Attended school: n (%)	2,250	1,336	1,798	1,788	3,586 (73.6)
Years of education: Mean (SD)	12.0 (3.9)	8.6 (3.6)	11.1 (4.2)	10.7 (4.0)	10.9 (4.1)
Average weekly food expenditure: mean (SD)	3,760.9 (3,801.5)	2,502.5 (2,702.9)	3,329.2 (3,653.8)	2,956.4 (3,041.6)	3,143.2 (3,367.2)
Average weekly food cost: mean (SD)	3,817.7 (3,831.5)	3,154.9 (3,000.3)	3,729.8 (3,793.7)	3,253.6 (3,079.9)	3,492.6 (3,464.5)
Per capita weekly food expenditure: Mean (SD)	827.8 (904.6)	734.4 (1,056.1)	821.5 (1,114.4)	742.2 (827.7)	782.0 (982.9)
Per capita weekly food cost: Mean (SD)	841.4 (913.4)	919.5 (1,132.5)	937.9 (1,183.7)	821.0 (836.7)	879.7 (1,027.3)
Average annual household non-food expenditure	144,917.6 (106,990.7)	43,131.7 (52,277.9)	100,309.9 (102,185.5)	90,176.8 (95,182.1)	95,029.5 (98,813.9)
Per capita annual household non-food expenditure	30,548.5 (24,992.3)	12,376.3 (17,022.6)	23,265.8 (26,620.2)	20,295.6 (19,650.1)	21,787.3 (23,299.7)
Household owns a radio: n (%)	2,210	1,975	2,050	2,135	4,185 (86%)
Household owns a fridge: n (%)	1,792	426	1,108	1,110	2,218 (45.6)
Household owns a TV: n (%)	2,234	1,145	1,735	1,644	3,379 (69.5)
Household owns a bicycle: n (%)	78	598	237	439	676 (13.9)
Household owns a motorcycle: n (%)	298	419	284	433	717 (14.7)
Household owns a car: n (%)	679	131	447	363	810 (16.7)
Household owns a kerosene lamp: n (%)	2,402	2,344	2,366	2,380	4,746 (97.6)
Household owns a generator: n (%)	519	323	416	426	842 (17.3)
Household owns a rechargeable lamp: n (%)	963	465	669	759	1,428 (29.5)
SES quintiles (asset index)					
Q1 (most poor)	127	848	467	508	975 (20)
Q2 (very poor)	310	664	504	470	974 (20)
Q3 (poor)	542	433	508	467	975 (20)
Q4 (less poor)	754	221	454	521	975 (20)
Q5 (least poor)	750	224	513	461	974 (20)

Total household expenditure was also used to divide the households into quintiles (Table 2). The level of correlation between the asset index measure of SES and expenditure-based SES measure was 50%. SES based on the value of the asset index was used to divide the individuals and households into quintiles. Table 2 also shows that the higher the SES quintile, the higher the per capita food and non-food expenditures, though inequality in food expenditure is not as pronounced as inequality in total expenditure, which can be seen from the higher value of the equity ratio (Q1/Q5).

Table 2: Other socio-economic status quintiles and per capita household expenditure

SES quintiles (per capita household expenditure for households) Q1 (most poor) Q2 (very poor) Q3 (poor) Q4 (less poor) Q5 (least poor)	n (%) 977 (20) 973 (20) 975 (20) 974 (20) 974 (20)
SES quintiles (based on assets for individuals) Q1 (most poor) Q2 (very poor) Q3 (poor) Q4 (less poor) Q5 (least poor)	n (%) 4,437 (20) 4,443 (20) 4,425 (19.9) 4,431 (19.9) 4,433 (20)
Per capita food expenditure Q1 (most poor) Q2 (very poor) Q3 (poor) Q4 (less poor) Q5 (least poor) Q1/Q5	mean (SD) 649.6 (551.1) 775.9 (669.9) 846.1 (825.3) 915.3 (909.0) 1,211.9(1687.0) 0.54
Per capita household expenditure Q1 (most poor) Q2 (very poor) Q3 (poor) Q4 (less poor) Q5 (least poor) Q1/Q5	mean (SD) 10,076.7 (12,350.1) 15,126.6 (15,455.8) 19,524.2 (15,195.8) 26,921.8 (23,361.5) 36,553.2 (33,432.8) 0.28

Table 3 shows that those in higher quintiles have higher levels of ownership of household items, with the exception of bicycles, where ownership decreases with increasing SES.

Table 3: Breakdown of the household assets ownership by socio-economic status

SES quintiles	**Radio N = 4185 N (%)**	**Fridge N = 2218 N (%)**	**TV N = 3379 N (%)**	**Bicycle N = 676 N (%)**	**Motor-cycle N = 717 N (%)**	**Car N = 810 N (%)**	**Kerosene lamp N = 4745 N (%)**	**Generator N = 842 N (%)**	**Recharge-able lamp N =1428 N (%)**
Q1	542 (13)	0	3 (1)	237 (35)	26 (4)	1 (1)	941 (19.8)	0 (0)	5 (0.4)
Q2	842 (20)	39 (2)	543 (16)	179 (26)	97 (13)	18 (2)	957 (20.2)	17 (2)	93 (6.5)
Q3	901 (22)	414 (19)	909 (27)	113 (17)	166 (23)	32 (4)	950 (20.0)	64 (8)	217 (15.2)
Q4	938 (22)	816 (37)	954 (27)	68 (10)	166 (23)	117 (14)	953 (20.1)	170 (20)	458 (32.1)
Q5	962 (23)	949 (42)	970 (29)	79 (12)	262 (37)	642 (79)	944 (19.9)	591 (70)	655 (45.9)
X2	994.1	3,128.5	3,327.0	175.4	253.9	2,192.8	7.5	1,729.6	1,241.3
p-value	.00001	.00001	.000001	.000001	.00001	.00001	.11	.0000001	.0000001

SECTION II: General health services use

Among the surveyed population there were 5,292 OPD visits and 282 IPD stays in the month preceding the survey. There were 2,637 cases where transportation costs were incurred. Malaria was the major health condition that required both OPD and IPD visits by households one month prior to the survey (Table 4). The next most common health condition was respiratory diseases. Hypertension was the number one non-communicable disease cause of visits to both OPD and IPD. Visits due to HIV/AIDS were reported by only one household.

Table 4: Occurrence of different diseases states/health conditions in households that required out-patient visits and in-patient admissions

	N (%) **Out-patient visits**	**N (%)** **In-patient admissions**
Malaria	2,694 (51.4)	93 (33)
Respiratory diseases	937 (17.7)	26 (9.2)
Diarrhoea	296 (5.6)	21 (7.4)
Diabetes	73 (1.4)	4 (1.4)
Cancer	4 (0.1)	2 (0.7)
Hypertension	140 (2.7)	14 (5)
Trauma	86 (1.6)	13 (4.6)
Immunisation	90 (1.7)	1 (0.4)
HIV	1 (0.02)	0 (0)
Appendicitis	13 (0.25)	17 (6.0)
ANC	74 (1.4)	7 (2.5)
Childbirth	27 (0.5)	22 (7.8)
Others	1,701 (32.1)	62 (22.0)

There were 3,926 visits to the different providers. The private sector was by far the most common source of healthcare. PMDs were the most common providers visited for healthcare (Table 5). The PMDs were followed by private hospitals and pharmacies (also in the private sector). The public hospitals and PHC centres were used to a lesser degree by the households.

Table 5: Providers visited for healthcare services

	N (%)
PMD	1,613 (41.1)
Private hospital	735 (19.7)
Pharmacy	645 (16.4)
Public hospital	547 (13.9)
Primary healthcare centre	126 (3.2)
Herbalist	105 (2.7)
Home	23 (1.6)
Laboratory	12 (0.3)
Others	120 (3.1)

The urbanites made greater use of private and public hospitals, pharmacies, and herbalists than rural dwellers (p<.05). Conversely, the rural dwellers were more likely to use PMDs. The hospitals, PMDs, and PHC centres were used more in Anambra state when compared to Enugu state. However, herbalists and pharmacies were used more in Enugu state. The use of public and private hospitals as well as pharmacies and laboratories increased with increased SES, whilst the use of PMDs decreased with increasing SES (p<0.05). These socio-economic differences are confirmed by the concentration indices, which are negative (i.e. pro-poor) for PHC centres, PMDs, laboratories, and others; and positive (pro-rich) for home care, private hospitals, public hospitals, pharmacies and herbalists.

Table 6: Differential use of different providers by different population groups

	Home n (%)	**Private hospital** n (%)	**Public hospital** n (%)	**PHC centre** n (%)	**PMD** n (%)	**Pharmacy** n (%)	**Herbalist** n (%)	**Lab.** n (%)	**Others** n (%)
Differential use of different providers by urban-rural residence									
Urban	15 (65%)	479 (65%)	390 (71%)	55 (44%)	760 (47%)	579 (90%)	89 (85%)	5 (42%)	49 (41%)
Rural	8 (35%)	256 (35%)	157 (29%)	71 (56%)	853 (53%)	66 (10%)	16 (15%)	7 (58%)	71 (59%)
X2 (p-value)	1.4 (.29)	68.6 (.0001)	100.6 (.0001)	2.9 (.10)	15.3 (.0001)	446.0 (.0001)	48.6 (.0001)	.43 (.57)	5.2 (.026)
Differential use of different providers by state of residence									
Enugu	15 (65%)	236 (32%)	256 (47%)	47 (37%)	554 (34%)	430 (67%)	71 (68%)	6 (50%)	49 (41%)
Anambra	8 (35%)	499 (68%)	271 (33%)	79 (53%)	1,059 (66%)	215 (33%)	34 (32%)	6 (50%)	71 (59%)
X2 (p-value)	1.6 (.29)	113.0 (.0001)	3.02 (.085)	8.8 (.004)	246.0 (.0001)	80.2 (.0001)	12.8 (.0001)	.00 (1.0)	4.4 (.042)
Differential use of different providers by SES									
Quintile 1	4 (17%)	94 (13%)	44 (8%)	28 (22%)	376 (23%)	42 (7%)	9 (8.5%)	2 (17%)	32 (26.5%)
Quintile 2	4 (17%)	108 (15%)	77 (14%)	28 (22%)	376 (23%)	66 (10%)	9 (8.5%)	5 (42%)	36 (30%)
Quintile 3	3 (14%)	149 (20%)	124 (23%)	26 (21%)	315 (20%)	157 (24%)	29 (28%)	2 (17%)	23 (19%)
Quintile 4	6 (26%)	171 (23%)	175 (32%)	27 (21%)	302 (19%)	181 (28%)	18 (17%)	1 (8%)	20 (17%)
Quintile 5	6 (26%)	213 (29%)	127 (32%)	17 (14%)	244 (15%)	191 (30%)	40 (38%)	2 (17%)	9 (8.5%)
CI	0.09	0.18	0.19	-0.07	-0.09	0.25	0.25	-0.13	-0.22
X2 (p-value)	1.2 (.88)	74.5 (.00001)	105.6 (.00001)	3.5 (.48)	55.4 (.0001)	180.3 (.00001)	35.4 (.0001)	3.8 (.43)	19.0 (.001)
Total	**23**	**735**	**547**	**126**	**1613**	**645**	**105**	**12**	**120**

Reasons why healthcare was not sought and preferences for improving financing, provision and utilisation of healthcare services

The major reasons that people who needed healthcare services did not seek care were that either the condition was not serious enough or they could not afford the cost of services (Table 7). The three main suggestions that respondents gave for improving provision, utilisation and financing of healthcare services were: provision of free services; subsidising healthcare; and construction of more public hospitals (Table 8).

Table 7: Reasons for not seeking treatment among those who reported illness

	N = 1163 N (%)
Illness or health condition was not serious	783 (67.3)
Could not afford health services	413 (35.5)
Could not afford transport costs	106 (9.1)
Poor quality of health services	79 (6.8)
Health facility/provider too far	53 (4.6)
Could not get time off work	17 (1.5)
Could not afford to take time off work	11 (0.9)
Queues too long at health facility	11 (0.9)
Other reasons	22 (1.9)

Table 8: Three main suggestions for improving provision, utilisation and financing of healthcare services

	N (%)
Provision of free healthcare services	3,815 (78.6)
Subsidies for healthcare services	2,683 (55.3)
Construction of more public hospitals	2,460 (50.7)
Improvement of quality of services in existing facilities	2,091 (44.4)
Provision of more health centres	1,979 (40.8)
Use of health insurance	691 (14.3)
Construction of more private hospitals	606 (12.5)
Other reasons	97 (2.0)

Expenditures on healthcare seeking

The mean monthly household health expenditure was 2,354 Naira (SD 6,080 Naira). Of this the mean monthly household health expenditure in public health facilities was 661 Naira (SD 3,446 Naira). The remaining expenditure was incurred in the private sector. The average monthly household expenditure on out-patient care was 1,809 Naira, and about 610 Naira for in-patient care (Table 9). Average monthly household expenditure was highest in public hospitals (423 Naira for out-patient care, and 230 Naira for in-patient care), compared with PHC (48 Naira for out-patient care and 5 Naira for in-patient care).

Table 9: Average monthly total household expenditures on out-patient and in-patient care and expenditure in public health facilities

	Mean (SD)
Expenditure in public facilities	661.3 (3,445.7)
Total expenditure – out-patient care	1,809.0 (4,612.0)
Total expenditure – in-patient care	609.6 (4,249.1)
Expenditure on out-patient care in public facilities	457.8 (2,115.5)
Expenditure on in-patient care in public facilities	203.5 (2,725.9)
Expenditure on out-patient care in public hospital	422.7 (2,022.2)
Expenditure on out-patient care in PHC	48.3 (724.7)
Expenditure on in-patient care in public hospital	229.6 (3,233.0)
Expenditure on in-patient care in PHC	4.6 (144.1)

Note: The average monthly household expenditure on transport for both OPD and IPD was 110.5 Naira (SD 405 Naira).

Table 10 shows that the urban dwellers had higher average monthly household expenditure compared to the rural dwellers. The differences in monthly household expenditures in the public sector for both OPD visits and IPD stays were not statistically different between the urban and rural areas. Table 10 also shows that the higher the SES, the higher the total health expenditures, expenditures in the public sector, and expenditures on OPD visits in the public sector. The monthly expenditures on IPD were not statistically different across the quintiles.

Table 10: Monthly household health expenditures in public facilities by different population groups for the whole sample

	Total expenditure in public and private facilities Mean (SD)	**Total expenditure in public facilities Mean (SD)**	**OPD Public Mean (SD)**	**IPD Public Mean (SD)**
by urban-rural				
Urban	2,443.8 (6,166.6)	620.0 (3,199.5)	439.0 (2,160.8)	180.9 (2,347.8)
Rural	2,266.5 (5,993.7)	700.8 (3,666.6)	475.7 (2,070.9)	225.2 (3,045.5)
X2 (p-value)	16.8 (.0001)	1.5 (.22)	1.4 (.24)	.06 (.81)
by SES				
Quintile 1	1,868.3 (5,184.7)	392.2 (1,901.0)	338.6 (1,678.8)	53.6 (876.6)
Quintile 2	2,256.1 (5,984.3)	702.2 (4,189.7)	450.5 (2,462.2)	251.6 (3,423.1)
Quintile 3	2,396.8 (6,178.3)	699.8 (3,623.1)	439.1 (1,818.5)	260.7 (3,095.1)
Quintile 4	2,260.7 (5,713.4)	702.4 (2,857.3)	577.5 (2,199.4)	125.0 (1,851.4)
Quintile 5	2,987.4 (7,128.2)	810.1 (4,106.3)	483.4 (2,311.7)	326.7 (3,412.1)
X2 (p-value)	9.77 (.045)	16.0 (.003)	15.8 (.003)	6.5 (.17)
CI	0.08	0.10	0.07	0.17

Table 11 recalculates mean expenditure for those households that incurred positive expenditure. Urban dwellers had higher expenditure for both out-patient and in-patient care compared to the rural dwellers, but the p-value was not significant for in-patient care. Similarly, households in Anambra state spent more money on in-patient and out-patient care compared to households from Enugu state. The table also shows that the higher the SES, the higher the amount of money spent on out-patient care. This pattern was also seen for in-patient care, except that expenditure was highest in quintile 3. Overall, the concentration index for expenditure is positive for both in-patient and out-patient expenditure.

Table 11: Monthly household health expenditure in public facilities for out-patient and in-patient care by different population groups, for those households which incurred expenditure > 0.

	Out-patient care, public sector facilities Mean (SD)	In-patient care, public sector facilities Mean (SD)
by urban-rural areas		
Urban	2,859.0 (66,829.0) n = 3,074	19,603.1 (31,354.6) n = 94
Rural	1,622.1 (4,089.3) n = 2,322	15,153.0 (24,241.5) n = 127
X2 (p-value)	22.1 (.00001)	2.1 (.15)
by SES		
Quintile 1	1,393.9 (3,972.7) n = 1,183	14,004.1 (19,706.5) n = 39
Quintile 2	1,511.2 (4,249.0) n = 1,061	10,860.0 (11,769.1) n = 40
Quintile 3	1,644.3 (3,664.2) n = 1,042	22,280.6 (39,679.3) n = 40
Quintile 4	1,741.5 (3,711.1) n = 1,129	18,240.5 (30,125.0) n = 51
Quintile 5	1,973.0 (4,517.6) n = 970	19,140.6 (27,197.0) n = 50
X2 (p-value)	37.8 (.00001)	7.7 (.10)
CI	0.07	0.08

Table 12 shows that the highest expenditures were incurred in private hospitals, followed by public hospitals. More money was spent on PMDs compared to pharmacies and the least amount of money was spent on herbalists.

Table 12: Mean monthly household expenditures on treatment paid to different providers

	Mean (SD)
Private hospital	979.8 (5,265.7)
Public hospital	577.2 (4,324.6)
PMD	265.3 (1,518.2)
Pharmacy	182.8 (1,118.6)
Laboratory	42.4 (442.7)
PHC	35.1 (380.3)
Herbalist	2.6 (86.0)
Others	233.8 (4,488.6)

Table 13 shows how spending on the different providers differs by population group. Urban dwellers spent more money than rural dwellers on public and private hospitals, pharmacies, and laboratories. Enugu state residents spent more money on public hospitals and pharmacies, whilst Anambra state residents spent more money on private hospitals and PMDs. The table also shows that as SES increases, the expenditures on public and private hospitals, pharmacies, laboratories, and the home increases. Conversely, as SES decreases, expenditures on PHC centres, PMDs and herbalists increases.

Table 13: Mean monthly total household expenditure on treatment paid to different providers

	Home	Private hospital	Public hospital	PHC centres	PMD	Pharmacy	Herba-list	Lab.	Others
Mean expenditures on treatment by urban-rural residence									
Urban	18.7 (467.1)	1,320.8 (6,357.4)	720.8 (3,595.1)	24.5 (2,98.1)	231.9 (934.5)	283.1 (1,031.8)	2.0 (48.3)	60.4 (442.9)	207.9 (5,424.1)
Rural	1.5 (44.6)	624.3 (3,776.2)	427.1 (4,970.4)	46.1 (450.4)	300.2 (1,949.0)	78.1 (1,193.9)	3.2 (112.6)	23.6 (441.8)	260.8 (3,233.9)
X2 (p-value)	1.4 (.23)	68.1 (.0001)	98.4 (.0001)	3.0 (.082)	12.7 (.0001)	435.4 (.0001)	0.43 (.51)	48.4 (.0001)	5.3 (.022)
Mean expenditures on treatment by state of residence									
Enugu	9.8 (228.8)	767.6 (5,499.5)	578.0 (3,434.4)	39.3 (463.1)	262.1 (2,016.1)	215.6 (961.0)	1.5 (38.2)	64.0 (583.4)	108.0 (1,365.6)
Anambra	10.7 (415.9)	1,193.9 (5,010.9)	576.4 (5,069.6)	30.7 (272.1)	268.6 (725.2)	149.7 (1,257.3)	3.7 (115.7)	20.6 (221.1)	361.1 (6,215.7)
X2 (p-value)	1.6 (.21)	110.0 (.0001)	2.4 (.12)	8.5 (.004)	222.7 (.0001)	73.9 (.0001)	.001 (.98)	12.9 (.0001)	4.5 (.034)
Mean expenditures on treatment by SES									
Quintile 1	2.3 (64.5)	380.5 (1,766.5)	161.9 (1,194.4)	53.8 (582.7)	340.6 (2,668.9)	99.0 (1,142.3)	5.6 (172.1)	44.0 (661.5)	263.2 (3,641.2)
Quintile 2	4.4 (120.8)	721.7 (4,411.1)	417.8 (3,338.5)	54.5 (468.1)	285.0 (1,020.8)	120.7 (1,376.8)	2.4 (42.7)	19.7 (297.9)	281.0 (2,718.9)
Quintile 3	1.0 (25.0)	903.2 (3,797.3)	608.3 (3,731.4)	19.4 (186.9)	269.2 (1,359.7)	180.9 (700.1)	1.1 (24.6)	45.9 (375.7)	481.4 (8,821.6)
Quintile 4	32.1 (698.9)	1,172.1 (4,748.1)	926.2 (6,521.5)	28.0 (270.7)	264.7 (1,076.7)	243.0 (956.1)	1.5 (45.0)	31.1 (259.7)	82.9 (1,196.6)
Quintile 5	11.5 (232.4)	1,726.4 (8,854.9)	774.2 (4,929.5)	19.4 (233.4)	166.4 (576.7)	271.5 (1,277.9)	2.4 (53.9)	71.6 (494.3)	59.3 (893.3)
X2 (p-value)	1.2 (.88)	75.8 (.0001)	105.3 (.0001)	3.6 (.47)	52.9 (.0001)	177.0 (.0001)	3.8 (.44)	35.2 (.0001)	19.0 (.0001)
CI	0.36	0.26	0.24	-0.22	-0.11	0.20	-0.25	0.13	-0.21
Total	10.3 (335.1)	979.8 (5,265.7)	577.2 (4,324.6)	35.1 (380.4)	265.3 (1,518.2)	182.8 (118.6)	2.6 (86.0)	42.4 (442.7)	233.8 (4,488.6)

Table 14 shows that average monthly household out-patient care expenditure for those with chronic diseases such as diabetes and hypertension was more than 4000 Naira. However, in general, in-patient care expenditures were higher than out-patient care expenditures, but the frequency of use of out-patient care was much more than in-patient care.

Table 14: Mean monthly household expenditures for different diseases states/health conditions

	Out-patient care Mean (SD)	**In-patient care Mean (SD)**	**Transportation Mean (SD)**
Malaria	1407.0 (2,594.5)	12,442.0 (16,263.3)	198.3 (680.9)
Respiratory diseases	1,241.1 (3,359.5)	10,023.1 (8,702.7)	198.6 (323.1)
Diarrhoea	1,395.9 (2,598.7)	7,995.7 (4,429.2)	180.1 (212.3)
Diabetes	4,957.8 (5,820.8)	21,900.0 (14,396.8)	785.5 (1,574.2)
Cancer	1,725.0 (1,330.7)	17,900.0 (13,010.8)	433.3 (208.2)
Hypertension	5,843.1 (7,362.7)	13,575.0 (13,575.1)	468.9 (1,059.2)
Trauma	4,357.0 (11,948.8)	21,462.3 (22,877.6)	617.7 (880.4)
Immunisation	463.2 (692.2)	0	132.2 (151.3)
HIV	0	0	0
Appendicitis	6,926.9 (7,141.3)	18,185.3 (26,276.4)	625.0 (682.3)
ANC	1,524.2 (1,677.6)	16,021.4 (16,483.3)	215.9 (314.3)
Childbirth	4,226.5 (5,721.5)	20,183.9 (28,057.4)	360.8 (330.8)
Others	2,193.2 (5,138.4)	24,817.5 (42,602.9)	326.5 (928.1)

SECTION III: Use of health insurance and analysis of the level and distribution of household healthcare payments

There were very low enrolment rates in health insurance and only 51 (1.0%) of the households had a resident who was a primary enrolee in a health insurance scheme. The primary enrolees were mostly adults, and NHIS was by far the most important insurance scheme (Table 15). The number of people that were covered by the health insurance schemes was also very low and most of this coverage was through the NHIS (Table 16).

Table 15: Household enrolment in any health insurance scheme

	N (%)
No. of adults primarily enrolled	
1	38 (76)
2	8 (16)
4	3 (6)
>4	1 (2)
No. of teenagers primarily enrolled	
1	1 (20)
2	3 (60)
3	1 (20)
No. of children primarily enrolled	
1	2 (22.2)
2	3 (33.3)
3	1 (11.1)
4	2 (22.2)
>4	1 (11.1)
No. of people enrolled in PVHI	
1	3 (100)
No. of people enrolled in NHIS	
1	42 (93)
>4	3 (7)
No. of people primarily enrolled in CBHI	
2	1 (50)
>4	1 (50)
No. of people enrolled in other insurance schemes	0

Table 16: Households covered in any health insurance scheme

	N (%)
No of people covered by PVHI (apart from the enrolee)	
2	1 (33.3)
3	1 (33.3)
>4	1 (33.3)
No of people covered by NHIS (apart from the enrolee)	
1	1 (3)
2	13 (30)
3	10 (24)
4	4 (10)
>4	14 (33)
No of people covered by CBHI (apart from the enrolee)	
>4	1 (100)
No of people covered by other insurance mechanisms (apart from the enrolee)	0

Table 17 shows that out of 3,187 payment actions, OOPS was the predominant payment mechanism. It was used by 98.8% of people that had to make healthcare payments. Only one person claimed to have used PVHI. This justifies the need to focus further FIA on only OOPS since other financing mechanisms were hardly used at the household level.

Table 17: Number of respondents that used different financing mechanisms

	N (%)
Reimbursement	9 (0.28)
OOPS	3,150 (98.8)
PVHI	1 (0.03)
NHIS	0 (0)
CBHI	0 (0)
Instalment	9 (0.28)
In-kind	4 (0.13)
Others	14 (0.44)

There was more use of OOPS in Anambra state compared to Enugu state (Table 18). Also, the use of OOPS increased as SES increased. In the urban areas there was more use of reimbursement and OOPS, whilst rural dwellers used other payment mechanisms, not listed, more (Table 18).

Table 18: Differential use of different payment mechanisms by different population groups

	Reimbursement N (%)	OOPS N (%)	PVHI N (%)	NHIS N (%)	CBHI N (%)	Instalment N (%)	In-kind N (%)	Others N (%)
Differential use of different payment mechanisms by urban-rural residence								
Urban	8 (89%)	1,888 (60%)	0	0	0	3 (33%)	4 (100%)	3 (21%)
Rural	1 (11%)	1,262 (40%)	1 (100%)	0	0	6 (67%)	0	11(79%)
X2(p-val.)	5.2 (.039)	283.4 (.0001)	1.04 (.49)	Na	Na	1.1 (.34)	3.9 (.13)	4.9 (.032)
Differential use of different payment mechanisms by state of residence								
Enugu	9 (100%)	1,360 (43%)	1 (100%)	0	0	6 (67%).	1 (25%)	11 (79%)
Anambra	0	1,790 (57%)	0	0	0	3 (33%)	3 (75%)	3 (21%)
X2(p-val.)	8.9 (.004)	184.6 (.0001)	1.0 (1.0)	Na	Na	1.01 (.34)	1.02 (.37)	4.5 (.057)
Differential use of different payment mechanisms by SES								
Quintile 1	0	547 (17.4%)	0	0	0	2 (22.2%)	2 (50%)	4 (28.6%)
Quintile 2	3 (33.3%)	579 (18.4%)	1 (100%)			2 (22.2%)	0	2 (14.3%)
Quintile 3	1 (11.1%)	649 (20.6%)	0			4 (44.4%)	1 (25%)	6 (42.9%)
Quintile 4	3 (33.3%)	702 (22.3%)	0			0	0	1 (7.1%)
Quintile 5	2 (22.2%)	672 (21.4%)	0			1 (11.1%)	1 (25%)	1 (7.1%)
X2(p-val.)	3.8 (.44)	80.7 (.0001)	3.9 (.41)			4.9 (.3)	3.5 (.48)	6.8 (.15)
CI	0.18	0.05	-.4	-	-	-.18	-.2	-.2
Total	9	3,150	1	0	0	9	4	14

As expected, most of money that was spent on healthcare by households was through OOPS with an average monthly expenditure of 2,219 Naira (Table 19). The average expenditures using other payment mechanisms were less than 50 Naira.

Table 19: Mean monthly expenditures on treatment paid using different payment mechanisms by all households

	Value of financing mechanisms Mean (SD)
OOPS	2,219.1 (8,300.6)
Instalment	11.4 (367.2)
Reimbursement	3.8 (148.1)
In-kind	0.73 (38.6)
PVHI	0 (0)
NHIS	0 (0)
CBHI	0 (0)
Others	42.3 (1,145.9)
All	2,353.8 (6,079.7)

SECTION IV: Financing incidence analysis of out-of-pocket spending

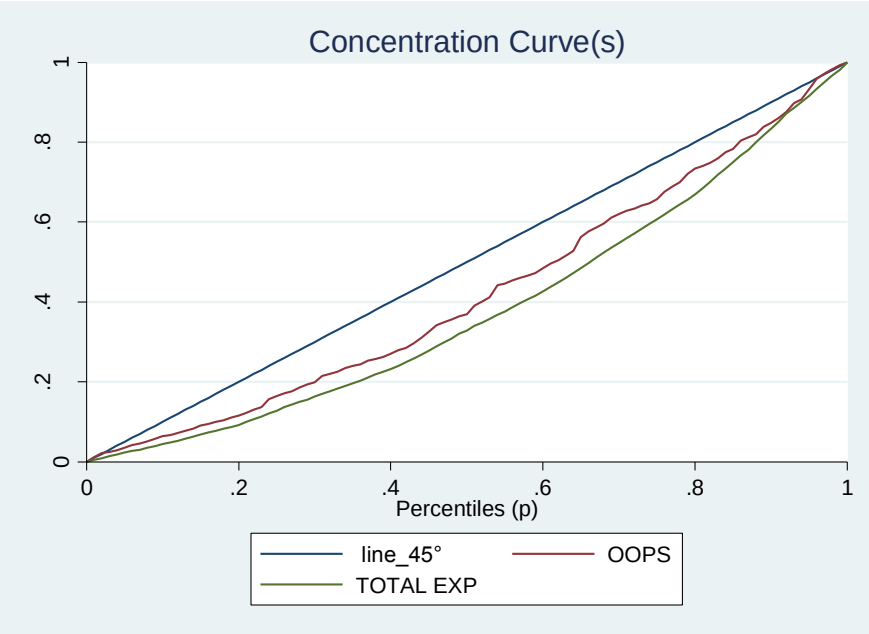
The mean monthly household out-of-pocket payment was higher in the urban areas, and Anambra state compared with Enugu state. It was also higher in the upper SES quintiles compared with the lower quintiles (Table 20).

Table 20: Mean monthly household out-of-pocket spending on treatment paid by different population groups

	MEAN OOPS (SD)
Mean expenditures on treatment by urban-rural residence	
Urban	2,752.1 (8,713.9)
Rural	1,662.4 (7,808.9)
Kruskal-Wallis (p-value)	272.2 (.0001)
Mean expenditures on treatment by state of residence	
Enugu	1,841.1 (6,005.6)
Anambra	2,601.9 (10,094.3)
Kruskal-Wallis (p-value)	144.7 (.0001)
Mean expenditures on treatment by SES	
Quintile 1	1,287.7 (4,636.3)
Quintile 2	1,715.1 (7,093.0)
Quintile 3	2,368.7 (10,300.0)
Quintile 4	2,774.1 (8,369.4)
Quintile 5	2,958.4 (9,754.8)
Kruskal-Wallis (p-value)	136.9 (.0001)
CI	0.16

The concentration curve for out-of-pocket healthcare payments and the Lorenz curve for total household expenditure show that these are both distributed in favour of the better-off SES quintiles (Figure 1); the lower 60% of households incur only about 40% of OOPS. However, when the health expenditure distribution is compared with the distribution of total expenditure, the Kakwani index was regressive with a value of -0.18, indicating that the poorest spend a greater share of their expenditure on health than the least poor.

Figure 1: Concentration curves showing the socio-economic status distribution of out-of-pocket spending in relation to total household expenditure



SECTION V: Incidence of catastrophic healthcare payments

Catastrophic health expenditures

The incidence of catastrophic health expenditures was estimated using the threshold of 40% of household non-food expenditure and, for comparison purposes, the 10% and 5% thresholds. The results show that 27% of households incurred monthly healthcare payments in excess of 40% of non-food expenditure (Table 21). The incidence of catastrophic payments was 48% at a threshold of 10% and 57% at a threshold of 5%. Hence, as the threshold is lowered, the incidence of catastrophic expenditures increases.

Table 21: Incidence of catastrophic expenditure at different thresholds for different services

	>40%	**>5%**
Monthly household total health expenditure	27%	57%
Monthly household OPD expenditure in public facilities	8%	11%
Monthly household OPD expenditure in all facilities	22%	56%

Table 22 shows that the incidence of catastrophic health expenditures was generally greater in the rural areas compared to the urban areas. Incidence of catastrophic monthly total household expenditure increased as SES decreased, both at 40% and 5% thresholds. The most-poor SES groups had the highest incidence of catastrophic expenditures. The distribution of catastrophe between the two states was mixed, depending on the criterion chosen. The higher the SES quintile, the higher the incidence of catastrophic expenditures due to public sector OPD visits (which measures the extent to which public sector expenditure causes catastrophe).

Table 22: Number of households from different population groupings with catastrophic health expenditures

	>5% of non-food expenditure N (%)	>40% of non-food expenditure N (%)	Out-patient expenditure >40% of non-food expenditure N (%)
By urban-rural			
Urban	1,148 (46%)	378 (15%)	350 (14%)
Rural	1,627 (68%)	921 (39%)	703 (30%)
X2 (p-value)	243.1 (.0001)	342.2 (.0001)	179.5 (.0001)
By states			
Enugu	1,326(54%)	613 (25%)	552(23%)
Anambra	1,449(60%)	686 (28%)	501(21%)
X2 (p-value)	15.3 (.00001)	6.5 (.011)	2.0 (.09)
By SES			
Quintile 1	653 (68%)	383(40%)	286(31%)
Quintile 2	590 (61%)	302(31%)	242(26%)
Quintile 3	548 (56%)	248(26%)	208(22%)
Quintile 4	490 (50%)	184(19%)	184(19%)
Quintile 5	493 (51%)	181(18.6%)	132(14%)
X2 (p-value)	83.4 (.00001)	155.7 (.00001)	89.9 (.0001)
CI	-0.06	-0.16	-0.15

SECTION VI: Benefit incidence analysis of priority public health services

Benefit incidence for different population groups consuming free services

Rural dwellers consumed slightly more free priority public health services than their share of the population, compared to the urbanites (Table 23), with 57% of the population consuming approximately 55% of the services. Also, residents of Anambra state accessed more free services compared with residents from Enugu state. There was very little difference in access of services by socio-economic group, and no difference by gender.

Table 23: Number of individuals that accessed free priority public health services by population groups

Population groupings	Population group share in total population	Number and % of group that accessed free services
By urban-rural areas		
Urban n = 12,745	57.4%	1,798 (14.1%)
Rural n = 9,473	42.6%	1,485 (15.7%)
X2 (p-value)		10.6 (.001)
By state		
Enugu n = 11,047	49.7%	1,141 (10.3%)
Anambra n = 11,171	50.3%	2,140 (19.2%)
X2 (p-value)		3,41.5 (.0001)
By gender		
Males n = 10,069	45.5%	1,498 (14.9%)
Females n = 12,062	54.5%	1,783 (14.8%)
X2 (p-value)		.07 (.40)
By SES		
Quintile 1 n = 4,437	20.0%	695 (15.7%)
Quintile 2 n = 4,443	20.0%	711 (16.0%)
Quintile 3 n = 4,425	19.9%	632 (14.3%)
Quintile 4 n = 4,431	19.9%	623 (14.1%)
Quintile 5 n = 4,433	20.0%	614 (13.9%)
X2 (p-value)		13.8 (.008)
CI		-0.03

Immunisation services were the most commonly used free services, consumed by 2,992 individuals (Table 24). They were followed by ITNs (313 people) and free antimalarial drugs (61 people). Only one person in the sample accessed free HIV treatment services. The results also show that 22 people consumed free ANC, 3 free deliveries, 7 TB treatments, and 165 used “other” services.

Compared to their share in the sample population, rural dwellers accessed relatively more immunisation services, antimalarial drugs, and TB treatment services compared to urban dwellers (Table 24). Conversely, urban residents accessed more of the free ITNs and ANC services. There was generally more access of free services in Anambra state, with the exception of TB treatment services that were utilised more in Enugu state. Females generally used more of the free services than males did. Use of immunisation services was very similar across the 5 SES quintiles, and the poor benefited relatively more from free antimalarial drugs. However, the better-off quintiles captured the majority of the benefits of ITNs and ANC services.

Table 24: Number of people from different population groups that accessed various free public health goods and services

	Immunisation N (%)	ITNs N (%)	Antimalaria drugs N (%)	ANC N (%)	Child-birth N (%)	ARVs N (%)	FP N (%)	TB N (%)
Benefits by urban-rural residence								
Urban n = 12,745 (57.4%)	1,649 (55%)	308 (98%)	22 (36%)	16 (73%)	1 (33%)	0 (0%)	0	1 (14%)
Rural n = 9,473 (42.6%)	1,343 (45%)	5 (2%)	39 (54%)	6 (27%)	2 (67%)	1 (100%)	0	6 (86%)
X2 (p-value)	45.2 (.0001)	278.9 (.0001)	8.1 (.003)	3.0 (.064)	.55 (.43)	1.2 (.45)	N/A	4.8 (.034)
Benefits by state of residence								
Enugu n = 11,047 (49.7%)	1,093 (37%)	2 (1%)	13 (21%)	1 (4%)	1 (33%)	0 (0%)	0	6 (86%)
Anambra n = 11,171 (50.3%)	1,899 (63%)	311 (99%)	48 (79%)	21 (96%)	2 (67%)	1 (100%)	0	1 (14%)
X2 (p-value)	0.77 (.21)	173.5 (.0001)	4.4 (.022)	8.3 (.0010)	0.001 (.74)	0.50 (.67)	N/A	8.7 (.007)
Benefits by gender								
Male n = 10,069 (45.5%)	1,429 (48%)	107 (34%)	21 (34%)	0 (0%)	0 (0%)	0 (0%)	0	3 (43%)
Female n = 12,062 (54.5%)	1,563 (51%)	206 (66%)	40 (66%)	22 (100%)	3 (100%)	1 (100%)	0	4 (57%)
X2 (p-value)	60.3 (.0001)	18.6 (.0001)	3.21 (.047)	18.8 (.0001)	2.5 (.16)	.85 (.54)	N/A	.027 (.60)
Benefits by SES								
Quintile 1 n = 4,437 (20%)	604 (20.2%)	29 (9.3%)	25 (41%)	2 (9%)	1 (33%)	0 (0%)	0	2 (29%)
Quintile 2 n = 4,443 (20%)	664 (22.2%)	59 (18.9%)	8 (13%)	2 (9%)	0 (0%)	0 (0%)	0	2 (29%)
Quintile 3 n = 4,425 (19.9%)	585 19.6%)	56 (17.8%)	8 (13%)	1 (5%)	1 (33%)	0 (0%)	0	2 (29%)
Quintile 4 n = 4,431 (19.9%)	569 (19%)	94 (30%)	12 (20%)	12 (55%)	1 (33%)	0 (0%)	0	1 (14%)
Quintile 5 n = 4,433 (20%)	570 (19%)	75 (24%)	8 (13%)	5 (23%)	0 (0%)	1 (100%)	0	0 (0%)
X2 (p-value)	64.6 (.0001)	55.6 (.0001)	15.3 (.005)	15.4 (.04)	2.22 (.73)	4.3 (.37)	N/A	2.8 (.72)
CI	-0.02	0.17	-0.20	0.27	-0.13	-	-	-0.29
Total	2,992	313	61	22	3	1	0	7

Table 25 translates the level of utilisation of various services into monetary units, valuing utilisation by the unit cost of the different services and comparing these across the different population groups. The value of benefits of consuming immunisation services was 439.5 Naira. It was 22.9 Naira for ITNs, 49.4 Naira for antimalarial drugs, 7.0 Naira for ANC, and 79.4 Naira for TB services. Because there was effectively no consumption of FP and ARVs, the benefits of these services was zero. The distribution of these benefits favoured urban areas for immunisation services, ITNs and ANC, whilst it favoured rural residents for anti-malaria drugs, childbirth services and TB treatment. Males received slightly more of the benefits of immunisation services, whilst females received more of the benefits of all of the other services. The table also shows that the better-off SES quintiles captured more of the benefits of immunisation services, ITNs and ANC services, whilst the poorer SES quintiles captured more of the benefits of free antimalaria drugs and treatment for TB.

Table 25: Benefit incidence of consumption of various free public health goods and services by urban/rural and gender (in Naira)

	Immunisation Mean (SD)	ITNs Mean (SD)	Antimalaria drugs Mean (SD)	ANC Mean (SD)	Childbirth Mean (SD)	ARVs Mean (SD)	FP Mean (SD)	TB Mean (SD)
Benefits by urban-rural residence								
Urban	457.3 (140.0)	176.2 (381.1)	13.7 (125.8)	81.3 (1,224.2)	4.3 (179.4)	0	0	14.3 (598.5)
Rural	419.7 (183.7)	3.3 (57.5)	33.7 (246.7)	11.0 (181.1)	10.3 (278.4)	0	0	159.8 (2,576.3)
Kruskal-Wallis (p-value)	45.2 (.0001)	278.8 (.0001)	8.2 (.004)	2.9 (.08)	0.47 (.49)	-	-	4.8 (.03)
Benefits by gender								
Males	463.4 (130.3)	71.9 (258.4)	16.2 (141.5)	0	0	0	0	69.1 (1,609.0)
Females	419.7 (183.6)	116.5 (321.1)	28.5 (224.9)	91.2 (1,239.6)	13.0 (312.0)	0	0	88.1 (1,914.8)
Kruskal-Wallis (p-value)	60.3 (.0001)	18.6 (.0001)	3.2 (.07)	18.7 (.0001)	2.6 (.10)	-	-	0.02 (.88)
Benefits by SES								
Quintile 1	398.3 (201.4)	40.9 (198.1)	41.4 (226.3)	8.8 (170.6)	11.0 (287.6)	0	0	76.0 (1,377.3)
Quintile 2	447.9 (152.9)	83.0 (276.1)	12.8 (124.3)	34.4 (535.0)	0	0	0	109.5 (2,134.7)
Quintile 3	447.9 (152.9)	90.8 (287.5)	24.5 (281.9)	55.6 (1,374.4)	12.3 (303.2)	0	0	164.5 (2,865.3)
Quintile 4	450.1 (150.0)	154.1 (361.3)	19.7 (139.0)	102.0 (1,207.9)	12.3 (304.2)	0	0	41.5 (1,018.1)
Quintile 5	460.4 (135.2)	124.2 (330.1)	15.0 (134.5)	53.5 (825.0)	0	0	0	0
Kruskal-Wallis (p-value)	64.5 (.0003)	56.7 (.0001)	15.3 (.004)	20.3 (.0004)	2.0 (.73)	-	-	2.1 (.72)
CI	0.03	0.19	-0.16	0.25	-0.11	-	-	-0.22

Although all of these priority services are notionally free, large numbers of people spent money on immunisation services, ITNs, antimalaria drugs, ANC, child birth services, and TB treatment. However, we conducted no further analysis to determine whether these expenditures were informal payments or payments made to private providers because for some reason people are choosing to consume these services in the private sector even though they are available in the public sector "for free".

Table 26 shows the number and percentages of people from different geographic and SES groups that spent money on public health goods and services. For instance, 523 urbanites spent money on various services and for immunisation services, whilst 55.6% of the payments was made by urbanites, the rural dwellers made 44.4% of the payments ($p<0.05$). Generally, more urbanites spent money on most public health services except for treatment of TB compared to rural dwellers. It was also found that females

and residents of Enugu state spent money on most public health services compared to males and those from Anambra state respectively. The table shows that as SES decreases, the more the payment for immunisation services.

Table 26: Percentage of users of different free public health goods and services who made payments for them

	Immunisation N (%)	**ITNs N (%)**	**Antimalaria drugs N (%)**	**ANC N (%)**	**Childbirth N (%)**	**ARVs N (%)**	**FP N (%)**	**TB N (%)**
Number that paid by urban-rural residence								
Urban n = 523	193 (55.6%)	0 (0%)	280 (83.6%)	27 (56.3%)	21 (75.0%)	1 (100%)	0	1 (25%)
Rural n = 244	154 (44.4%)	4 (100%)	55 (16.4%)	21 (43.7%)	7 (25.0%)	0	0	3 (75%)
X2 (p-value)	69.9 (.00001)	20.1 (.001)	.77 (.44)	29.1 (.00001)	2.4 (.17)	.17 (.85)	Na	11.3 (.012)
Number that paid by state of residence								
Enugu	207 (59.7%)	2 (50%)	285 (83.6%)	23 (47.9%)	19 (67.9%)	1 (100%)	0	2 (50%)
Anambra	140 (40.3%)	2 (50%)	50 (16.4%)	25 (52.1%)	9 (32.1%)	0	0	2 (50%)
X2 (p-value)	78.5 (.00001)	3.7 (.12)	2.6 (.12)	53.7 (.0001)	7.6 (.011)	.17 (.86)	Na	4.1 (.10)
Number that paid by gender								
Male	152 (43.8%)	0	120 (35.8%)	2 (4.2%)	1 (3.6%)	0	1 (100 %)	2 (50%)
Female	195 (56.2%)	4 (100%)	215 (64.2%)	46 (95.8%)	27 (96.4%)	0	0	2 (50%)
X2 (p-value)	11.6 (.001)	2.3 (.30)	.26 (.63)	22.9 (.00001)	13.7 (.00001)	Na	1.7 (.38)	.33 (.63)
Number that paid by SES								
Quintile 1	81/131 (61.8%)	1/70 (1.4%)	36/79 (45.6%)	13/72 (18.1%)	4/66 (6.1%)	0	0	1/67 (1.5%)
Quintile 2	67/134 (50.0%)	1/109 (0.9%)	57/116 (49.1%)	5/109 (4.9%)	4/105 (3.8%)	0	0	2/106 (1.9%)
Quintile 3	70/139 (50.4%)	1/116 (0.9%)	64/121 (52.9%)	6/111 (5.4%)	5/109 (4.6%)	0	0	0
Quintile 4	65/182 (35.7%)	1/170 (0.6%)	78/173 (45.1%)	15/171 (8.8%)	8/168 (4.8%)	0	0	0
Quintile 5	62/177 (35.0%)	0	98/170 (57.7%)	9/166 (5.4%)	7/166 (4.2%)	1/165 (0.6%)	0	1/165 (0.6%)
X2 (p-value)	31.4 (.00001)	2.0 (.73)	6.3 (.18)	14.8 (.005)	.54 (.97)	2.7 (.61)		5.1 (.28)
CI	-0.02	-0.17	0.03	-0.13	-0.03	-	-	-0.22

The mean payment for immunisation services was 75.6 Naira, for ITNs was 3.5 Naira, and for antimalaria drugs was 613 Naira. Table 27 shows that in urban areas more money was spent for all services except for child birth services compared to rural areas. There was also higher expenditure in Enugu state and amongst better-off SES quintiles.

Table 27: Expenditures on public health goods and services by urban/rural and state plus socio-economic status

	Immunisation Mean (SD)	ITNs Mean (SD)	Antimalaria drugs Mean (SD)	ANC Mean (SD)	Child-birth Mean (SD)	ARVs Mean (SD)	FP Mean (SD)	TB Mean (SD)
Expenditures by urban-rural residence								
Urban	56.2 (180.5)	0 (0)	613.3 (2,214.2)	71.5 (411.6)	443.6 (3,160.0)	0 (0)	0 (0)	0 (0)
Rural	125.0 (320.9)	22.8 (205.3)	168.1 (407.8)	566.4 (2,518.7)	728.6 (4,779.3)	0 (0)	0 (0)	25.9 (172.6)
Kruskal-Wallis (p-value)	117.2 (.0001)	22.3 (.0001)	8.3 (.004)	30.5 (.0001)	2.6 (0.11)	-	-	17.1 (.0001)
Expenditures by state of residence								
Enugu state	80.4 (246.8)	4.0 (87.1)	611.9 (2,201.2)	59.9 (454.1)	491.4 (3,673.8)	0 (0)	0 (0)	.34 (7.9)
Anambra state	61.3 (174.0)	.76 (5.59)	167.1 (603.7)	656.9 (2,525.1)	452.3 (1,458.2)	0 (0)	0 (0)	24.4 (173.7)
Kruskal-Wallis (p-value)	81.5 (.0001)	3.9 (.048)	11.8 (.0006)	57.1 (.0001)	7.9 (.005)	-	-	6.6 (.01)
Expenditures by Gender								
Male	84.7 (245.6)	0 (0)	371.8 (738.6)	.27 (4.0)	0 (0)	0 (0)	0 (0)	.80 (12.0)
Female	70.1 (221.5)	5.5 (100.9)	630.6 (2,479.2)	235.5 (1,353.5)	768.0 (4,307.8)	0 (0)	0 (0)	5.6 (83.7)
Kruskal-Wallis (p-value)	6.5 (.01)	2.3 (.12)	0.3 (.59)	25.3 (.0001)	16.4 (.0001)	-	-	0.02 (.90)
Expenditures by SES								
Quintile 1	73.7 (200.2)	.29 (2.43)	197.05 (441.5)	380.7 (1,379.0)	206.1 (858.1)	0 (0)	0 (0)	2.7 (22.2)
Quintile 2	69.6 (191.7)	.95 (9.8)	373.49 (1,107.8)	48.1 (322.9)	490.2 (3,177.9)	0 (0)	0 (0)	21.0 (160.9)
Quintile 3	108.5 (291.5)	.44 (4.7)	358.25 (691.1)	261.1 (2,135.8)	531.3 (4,312.5)	0 (0)	0 (0)	0 (0)
Quintile 4	56.5 (232.8)	11.83 (153.9)	691.12 (3,275.4)	142.7 (626.7)	573.7 (3,325.0)	0 (0)	0 (0)	0 (0)
Quintile 5	74.5 (222.9)	.00 (.00)	773.7 (1,883.1)	51.5 (278.6)	476.9 (3,735.0)	0 (0)	0 (0)	0 (0)
Kruskal-Wallis (p-value)	19.5 (.0006)	2.0 (0.73)	9.0 (.06)	15.6 (.004)	0.68 (.095)	-	-	7.9 (.09)
CI	-0.10	0.13	0.13	-0.41	-0.08	-	-	-0.45
Total	75.6 (230.7)	3.5 (80.4)	535.7 (2,026.0)	150.97 (1,088.8)	485.8 (3,444.4)	0 (0)	0 (0)	3.9 (67.1)

Table 28 shows the net benefit to individuals for different services and for aggregate net benefit from all the services to different population groups. It shows that for some of the services, there were negative net benefits, in other words, the amount paid out-of-pocket exceeded the cost of the services. This occurred for consumption of antimalarial drugs, ANC and childbirth services. All of these involve a lot of private sector provision, where costs may be greater and/or profits are earned. However, immunisation services had positive net befit for all population groups. The net benefit due to immunisation was more for rural dwellers, residents of Anambra state, males and worse-off SES groups. Conversely, net benefit due to ITNs was more for urbanites, females and better-off SES groups. Net benefit for ITNs was higher in Anambra state compared to Enugu state. The poor had more aggregate net benefits of priority public healthcare services with a negative concentration index and aggregate net benefits decreased as SES quintile increased (Table 29). Aggregate net benefit was also higher in rural areas and in Anambra state compared to urban areas and Enugu state respectively. There was no statistically significantly difference ($p>0.5$) in aggregate net benefit between males and females.

Table 28: Net benefits to individuals for services to different population groups

	Immunisation Mean (SD)	ITNs Mean (SD)	Anti-malaria drugs Mean (SD)	ANC Mean (SD)	Child-birth Mean (SD)	ARVs Mean (SD)	FP Mean (SD)	TB Mean (SD)	Cumulative net benefit Mean (SD)
Net benefits by urban-rural residence									
Urban	62.3 (169.4)	24.2 (153.6)	-24.3 (476.2)	8.2 (459.2)	-17.7 (649.6)	0 (0)	0 (0)	2.0 (221.5)	54.7 (1,000.6)
Rural	68.13 (179.0)	0.30 (30.9)	3.23 (109.8)	-4.4 (272.7)	-5.4 (483.7)	0 (0)	0 (0)	23.5 (994.7)	88.7 (1,214.3)
Kruskal-Wallis (p-value)	4.5 (.03)	223.4 (.0001)	106.9 (.0001)	1.65 (.20)	3.5 (.06)	-	-	1.1 (.29)	9.25 (.002)
Net benefits by states									
Enugu state	45.4 (155.15)	-.01 (23.3)	-29.1 (508.2)	-2.52 (96.1)	-22.8 (811.7)	0 (0)	0 (0)	20.4 (921.0)	11.4 (1,358.5)
Anambra state	84.0 (188.1)	27.8 (164.5)	3.77 (115.4)	8.1 (542.7)	-2.22 (168.1)	0 (0)	0 (0)	2.04 (237.1)	126.3 (749.4)
Kruskal-Wallis (p-value)	262.3 (.0001)	14.6 (.0001)	186.1 (.0001)	5.3 (.02)	15.9 (.0001)	-	-		496.5 (.00001)
Net benefits by gender									
Male	68.6 (176.9)	10.6 (102.5)	-6.6 (139.0)	-0.01 (0.60)	0	0 (0)	0 (0)	9.91 (610.2)	82.6 (675.5)
Female	61.9 (171.1)	16.9 (130.9)	-17.7 (482.9)	5.23 (530.4)	-22.9 (793.4)	0 (0)	0 (0)	12.25 (719.9)	58.2 (1,354.7)
Kruskal-Wallis (p-value)	8.29 (.004)	39.9 (.0001)	41.7 (.0001)	4.22 (.38)	1.1 (0.9)	-	-	-4.4 (1.0)	3.1 (.079)
Net benefits by SES									
Quintile 1	65.4 (173.4)	6.3 (79.2)	3.1 (111.4)	-4.8 (191.9)	-1.4 (155.3)	0 (0)	0 (0)	11.2 (530.8)	79.8 (635.2)
Quintile 2	73.1 (180.1)	13.5 (115.6)	-8.0 (194.8)	4.25 (218.3)	-11.3 (485.3)	0 (0)	0 (0)	16.4 (839.9)	88.3 (1,056.1)
Quintile 3	61.8 (173.3)	12.4 (110.6)	-6.3 (169.8)	-6.7 (341.8)	-11.7 (696.3)	0 (0)	0 (0)	22.5 (1061.2)	72.1 (1,365.7)
Quintile 4	62.4 (170.7)	21.0 (148.0)	-25.8 (667.6)	16.2 (684.8)	-20.2 (666.5)	0 (0)	0 (0)	5.6 (375.6)	59.2 (1,259.3)
Quintile 5	61.4 (170.3)	16.9 (129.0)	-26.0 (391.7)	5.3 (308.3)	-17.8 (724.2)	0 (0)	0 (0)	0 (0)	46.6 (1,029.1)
Kruskal-Wallis (p-value)	13.0 (.011)	39.9 (.0001)	41.7 (.0001)	4.22 (.38)	1.1 (.90)	-	-	3.2 (0.52)	16.0 (.003)
CI	-0.02	0.16	0.48	0.90	0.27	-	-	-0.24	-0.11
Total	64.8 (173.6)	14.0 (118.6)	-12.58 (368.0)	2.84 (390.8)	-12.46 (564.69)	0 (0)	0 (0)	11.2 (671.6)	69.2 (1,098.1)

5. DISCUSSION

General health service use

The findings show that health seeking for fever or presumptive malaria was the most common motive for both OPD visits and IPD stays. Hypertension was the most common non-communicable diseases that required OPD visits and IPD stays. The fact that malaria was the most common public health problem and disease burden has been found in several other studies in Nigeria (Onwujekwe et al., 2000; Onwujekwe, 2005; Jimoh et al., 2007). This reinforces the importance of tackling malaria due to its potential deplete household resources. However, it is surprising that despite the enormous amounts of money and other resources that have been invested in malaria control in Nigeria, the disease still remains the number one public health problem.

Despite all the investments in expanding the number and quality of public health facilities in the two states, their use was still lower than those of the private sector. PMDs followed by private hospitals and pharmacy shops were the most commonly used healthcare providers. This has also been found in other studies in Nigeria and in other sub-Saharan African (SSA) countries (Onwujekwe et al., 2000; Onwujekwe, 2005).

There were, however, inequities in use of the different providers, with the rural dwellers and poorer SES groups more likely to use low-level and informal providers, where treatment is usually of questionable quality (Hanson et al., 2004; Onwujekwe et al., 2007). These low-level providers included the PMDs, herbalists, the health posts, and other drug sellers. Similar findings have been found in other studies in Nigeria and elsewhere (Onwujekwe et al., 2007; Okeke and Uzochukwu, 2009; Mota et al., 2009; Okeke and Okeibunor, 2010). The implication of this is that the poor and rural people access more inappropriate healthcare services, which predisposes them to spending more on services that are not beneficial – leading to economic loss and by extension a higher economic burden of illness.

The level of expenditure on healthcare services was quite high, for both out-patient and in-patient care. Another study in Nigeria found that the average monthly healthcare in Enugu for 1st quintile was 53 Naira, and 1,065 Naira for 5th quintile naira for all households (Ichoku et al., 2009), which were lower than the expenditures that were found in this study. However, there was progressivity in payments in this study as higher expenditures were incurred by urbanites and the better-off SES groups.

It was not surprising to find that the lowest average expenditures were incurred in low level providers such as herbalists and PMDs and the highest average expenditure was incurred in private hospitals, followed by public hospitals. This disparity in expenditures could stem from the type of services offered by the different providers and particular treatment provision behaviours of the different providers. The limited range of services offered by the low level providers, the low levels of their operating costs and their practices of providing incomplete services such as under-dosing with drugs and treatment based on clients' requests instead of using appropriate standard operating procedures could account for the lower level of expenditure at these providers.

As expected, the highest average expenditures were generally incurred for non-communicable diseases, although the expenditures for communicable diseases such as malaria were also quite high. However, it should be borne in mind that the vast majority of people sought treatment for and incurred expenditures on communicable diseases. Hence, in sum, the total expenditures on communicable

diseases were more than that of non-communicable diseases. Conversely, the average monthly household expenditures on non-communicable diseases were greater than for communicable diseases. The higher average monthly household expenditures on non-communicable diseases is explained by the fact that most of them are chronic and require daily medication and regular visits to healthcare providers. Also, the drugs that are required to treat or control them are also usually more expensive than drugs used for the treatment of communicable diseases, which are mostly acute in nature and are usually cured with one round of appropriate treatment.

The finding that the expenditures were mostly paid through OOPS is in line with the current situation in Nigeria where there is minimal use of financial risk protection mechanisms such as health insurance. Hence, as was found in this study, there was almost complete absence of health insurance. The high level of use of OOPS potentially constrains access to and use of needed healthcare services by people especially the poor and people who do not earn regular income. It has been shown that OOPs constitutes major hindrance to use of health services especially when the need is greatest (Palmer et al., 2004; Ichoku and Fonta, 2006; Meessen et al., 2003; Kirigia et al., 2006). Half of those who could not access care in Nigeria did not so because of its costs (FOS, 2004a). OOPS also predisposes to people incurring catastrophic health expenditures.

Analysis of the level and distribution of household healthcare payments

It was interesting to find that approximately 99% of payments for healthcare by consumers were made using OOPS. However, it should be pointed out that public tax revenue is also used to pay for healthcare in public facilities since the government provides money to cover the personnel, overhead and capital expenditures of the public facilities, in addition to the internally generated revenue from user fees charged to patients. However, tax based payment accounts for 20% to 30% of funding of health services in Nigeria and private financing accounts for the rest, with most private financing being OOPS (Soyibo et al., 2005, 2010). Hence, private expenditures accounts for 70-80% of the expenditures and the dominant private expenditure is OOPS, which is about US$ 22.5 per capita and accounts for 9% of total household expenditures (FOS, 2004b).The findings of the National Health Accounts and other sources about the pre-eminence of OOPS in health financing in Nigeria as well as limited public financing (Soyibo et al., 2005, 2010) are hence supported by this study. The study did not examine the financing incidence of general tax revenue because maybe most of revenue is from oil and from VAT which is known to be regressive.

Only one person claimed to have used PVHI and only 1% of households claimed to have a primary NHIS enrolee. The number of individual covered by a health insurance scheme was also very low and most of this coverage was by the NHIS. No expenditure through CBHI was reported. However, despite the fact that no payment was made through the NHIS, it was found that 51 (1%) of households claimed to be primarily enrolled in the NHIS.

The finding of low enrolment and use of NHIS is surprising because there are federal government workers in the two states who are supposed to have been enrolled in the NHIS. Hence, either the enrolment process is incomplete leading to the exclusion of many potential beneficiaries from the scheme or many enrolled people are not benefiting from the services. This needs further investigation by the NHIS, so as to determine reasons for low enrolment and low uptake of benefits.

Generally, patients spent less in public facilities (hospitals and PHC centres) than in the private sector. The higher use and expenditures in the private sector has been found by other studies in the area and

rest of SSA (Onwujekwe, 2005). Increasing use of PHC centres could potentially make an important contribution to a more pro-poor health system.

The results that showed that for all the health conditions, the average expenditures on in-patient care were more than for out-patient care was expected, since in-patient care involves hospital stays and is usually for more serious conditions that require more and possibly more expensive drugs. However, because there were much more frequent out-patient visits compared to in-patient stays, the aggregate expenditure on out-patient care was higher.

The finding that expenditures on OPD in public hospitals and total expenditure increased as SES quintile increased could be an income effect since the poorer quintiles are constrained by their budgetary limits to spend less on healthcare and also possibly travel shorter distances or use less comfortable but cheaper means of transportation to visit healthcare providers. The budget constraints on the poorer quintiles will most likely predispose them to accessing and consuming poor, incomplete and inappropriate treatment services, with possibly dire consequences for their health.

The pattern of expenditures by different SES quintiles and by people living in different geographic locations is instructive of the financing burden borne by different population groups. There was also evidence of differential patterns in provider choice by population group. The higher SES groups were associated with higher level of expenditure on private hospitals, public hospitals, pharmacy shops and laboratories. Conversely, decreasing SES was associated with more expenditure on PMDs. Expenditures on home treatment, PHC centres and herbalists were not associated with SES group, pointing to the possibility of more equitable payments and service provision in the latter two types of providers, although the cell sizes were too small to detect differences. The differential expenditures paid by different quintiles could be as a result of providers charging more money to people that they knew or perceived to be well-off than they charged people that they knew or perceived to be poor.

The geographic differences in expenditures on different providers could arise because of the relative availability of different facilities in urban and rural areas. One can only pay for what is available. Hence, the urbanites spent more in public and private hospitals as well as pharmacy shops and laboratories, which are found more in the urban areas. Conversely, more money was spent on PMDs in the rural areas. However, the higher expenditures in urban areas could also be because the providers there charged higher fees than their rural counterparts bearing in mind that rural residents are usually poorer than the urbanites.

Financing incidence analysis of out-of-pocket spending by different population groups and by diseases

The study revealed various inequities in health financing as there were differential uses of the different payment mechanisms by different population groups. The finding that OOPS was higher in the urban areas, in Anambra state and increased as SES quintile increased was not surprising since such socio-economic better-off people had more disposable income to support their OOPS for healthcare services. Rural dwellers and those from lower SES quintiles probably did not have enough money to pay for health services, thereby accounting for their lower use of OOPS. This finding implies lower financial access to health services, rather than lower exposure to financial risk.

This study found that 98.8% of the private financing was paid through OOPS. This is higher than the 95% figure that was found by Soyibo (2003) but the difference may be insignificant. Hence, the result points to a still present and maybe increasing use of OOPS in Nigeria, despite the introduction of NHIS in 2005.

Equity concerns about OOPS have led to calls to seek other alternative financing mechanisms. The Commission on Macroeconomics and Health recommends that out-of-pocket expenditures by poor communities should be channelled into community financing schemes to help cover the costs of community-based health delivery (WHO, 2001). As Ichoku et al. (2009) noted payment for healthcare through OOP expenditure is a major source of impoverishment among the Nigerian population and together with information on the incidence of catastrophic financing it is clear that the healthcare market and healthcare financing arrangement needs urgent policy reform as part of the poverty reduction strategy of the country.

Catastrophic costs of private health financing (how to decrease use of out-of-pocket spending and ensure financial risk protection)

The high incidence of catastrophic costs in the study area is worrying, especially as the incidence increased as SES decreased. This was true of all the different indicators explored, and the different thresholds. Financial catastrophe was higher in the rural areas where disposable income is lower. Hence, the likelihood of further impoverishment of the poor people and greater incidence of poverty occurring amongst other SES is high. Ichoku et al. (2009) also found that the incidence of catastrophic payments was about 29% at the 5% threshold and that more people are caught up in catastrophic financing when the threshold is 5%. The numbers are quite high. This study showed that such private health spending accounted for more than 20% of household non-food expenditure.

All three of the key preconditions for catastrophic payments identified by Xu et al. (2003) were found in this study; the availability of health services requiring payment, low capacity to pay, and the lack of prepayment or health insurance (Xu et al., 2003). Services are available, but there is a high level of private sector use, requiring payment. Poverty is high, with 70% of the population living below the $1 per day poverty line (World Bank, 2003). People paid mostly through out-of-pocket expenditure, with almost no health insurance, or other pre-payment or assured reimbursement payment mechanisms (Onwujekwe et al., 2009).

The 2004 NLSS provides additional evidence on the impoverishing effect of healthcare payments on households. On average, about 4% of households are estimated to spend more than half of their total household expenditures on healthcare and 12% of them are estimated to spend more than a quarter. The 2004 NLSS detected large differences in the total burden of health expenditures both across socio-economic quintiles and geographic zones (National Bureau of Statistics, 2004). Therefore, protection against catastrophic health expenditures should be to be a priority item on the healthcare financing agenda (Velenyi, 2005). The Nigerian NHIS is designed to be a social security arrangement, based on concept of solidarity and equity, to provide financial protection to participants against ill health.

Benefit incidence analysis for priority public health services

It was surprising to find how very few individuals had consumed wholly free services. This is despite the purported widespread availability in the study area of free immunisation services and malaria treatment services for pregnant women and children under-five. Immunisation services were the most commonly used free service, followed distantly by ITNs and antimalarial drugs. This was expected since immunisation of children through the National Programme on Immunisation is widespread in the fight to eradicate polio in the country. Through the availability of free ITNs and ACTs through the Global Fund, these malaria control tools should be widely deployed. However, this study shows that procurement and

deployment of the materials by the government and development partners to health facilities and government stores do not mean that they actually reach the people.

A positive finding was that the consumption of antimalarial drugs and TB services was pro-poor, and pro-rural. To the extent that need is greater among poor and among rural communities, this reflects an equitable distribution. However, the distribution of ITNs and free ANC care both favoured the better off quintiles, and urban populations. Women also benefited disproportionately from ITNs and free antimalarial drugs. This may reflect their distribution through antenatal care.

The utilisation that is reported of free services is potentially a mix of public and private utilisation since the questionnaire did not differentiate between the two, and BIA is about the incidence of public subsidies. However, it is almost impossible to find utilisation of free services in the private sector, hence, we can be almost 100% sure that reported utilisation of free services occurred entirely in the public sector and does really represent public subsidies. Nonetheless, a note of caution should still be maintained that the benefits measured could be slightly overestimated. Also, in case of immunisation services, all free services are provided in the public sector and BIA of consumption of free immunisation services may in actual fact represent the net benefit of public subsidies for such services. It is only in the private sector that people pay to have immunisation. The results showed negative net benefits for those services that are also provided by the private sector: drugs for treatment of malaria, ANC and childbirth services.

It was also found that some people spent money on services that are supposed to be free including, immunisation services, ITNs, anti-malaria drugs, ANC, child birth services, ARVs, FP services and treatment of TB. More money was spent for all services in the urban areas except for child birth services compared to rural areas. There was also more expenditure in Enugu state and amongst better-off SES quintiles. The money that was paid for the supposedly free public health services may due to the imposition of formal user charges, private sector use of these services, or some degree of informal charging.

There was no clear underlying reason for the disparity in benefit incidence of the various public health tools to different sexes and people living in urban and rural areas. It was seen poorer groups benefited disproportionately from immunisation services, ITNs and ANC in the urban area, and also benefited disproportionately from antimalaria drugs, childbirth services and TB treatment in the rural area. Also, the reasons that females captured more of the benefits of other goods and services are not clear. However, the fact that pregnant women get free ITNs and antimalarial drugs from public health facilities could have contributed to their capturing higher benefits for those commodities. The finding that compared to their share in the population, rural dwellers marginally consumed more immunisation services and antimalarial drugs and TB treatment services compared to urban dwellers was reassuring for control of the diseases, because usually people residing in rural areas lack access to healthcare services. However, the finding that urbanites consumed more of free ITNs and ANC (ANC) services could be as a result of concentration of net distribution outlets and public health facilities in the urban areas. The finding of more consumption of free services in Anambra state compared to Enugu state is a challenge to policymakers in Enugu state to develop appropriate mechanisms for increasing the benefits of public health services to the people that need such services. The fact that although the poorer SES quintiles consumed more of free immunisation services and antimalarial drugs, the better-off SES consumed more of ITNs and ANC, represents inequity in the deployment of the two essential free services, which should be corrected using appropriate strategies.

Globally, there are concerns that public health interventions may not be reaching poor and marginalised populations have led investigators to examine the differences in the burden of disease and the coverage and impact of public health interventions among persons with differing socio-economic status (Barat et al., 2004). The explanation for the greater benefit incidence for treatment of TB by the poorer SES groups is clear since TB is a disease of poverty. However, the reasons for the inequity in the others are less clear, but could be due to the 'law of inverse equity' (Schellenberg et al., 2003; Victora et al., 2000), where the rich capture more of the benefits of publicly provided services when coverage is low, and that as coverage increases the poor will then start benefiting equally.

The finding that more urbanites spent money on most public health services except for treatment of TB compared to rural dwellers is probably because the services were more available in the urban areas and the urbanites also had more stable disposable income to spend on the health services. Also, it is reasonable that females that had more access to services paid more, although it was surprising to discover females paid for services that are free to those that are pregnant.

The statistically significant finding that showed that as SES increased, the payment for immunisation services increased is probably an income effect. People that have more money were more willing to pay to receive the essential services. An implication is that the poor who may need the services, but that do not have the money to pay will be excluded from benefiting. When viewed from the point that most of the services have externalities, the negative influences on non-coverage of all the needy people become worrisome. Nonetheless, while the rich are more likely to pay than the poor, the fact that the poor are as likely to use suggests that the immunisation programme is working.

Overall, it was reassuring to find that the poor gained more aggregate net benefits from priority public healthcare services and net benefits decreased as SES quintile increased. This also implies that if the coverage with these services is increased, the poor will benefit more and will be prevented from developing many diseases, most of which lead to their incurring impoverishing catastrophic health expenditures. The government and development partners should develop ways and means of scaling-up the free distribution of vital public health services, whilst developing and implementing strategies that will be used to decrease private payments for such services. The services should be viewed as public goods with externalities and payments that discourage their consumption will lead to negative consequences.

Improvement in services

The fact that the major reason that people who needed healthcare services did not seek care was that either that the condition was not serious enough or they could not afford the cost of services is a pointer to the lack of financial risk protection in the health system in the study areas. Hence, the three main suggestions that the respondents gave for improving provision, utilisation and financing of healthcare services, which were provision of free services, subsidising healthcare and construction of more public hospitals should help in guiding design of programmes for enhancing financial risk protection of the health system in the study areas.

Several factors contribute to the lower than desirable effectiveness of exemption implementation practice (Garshong et al., 2002). One factor is the lack of clarity among health service providers about the exemption policy (who is exempted and for which specific services). Another factor is that certain patient categories, such as pregnant women, are easier to identify than others. While there are

sometimes difficulties in establishing the exemption eligibility of patients on the basis of age, the most serious problem relates to identifying 'paupers'.

Limitations

One limitation of the study is that the one-month recall period may not lead to very accurate collection of data on household health expenditures for ambulatory services and the longer recall period for in-patient stays is also subject to recall bias.

Also, in collection of data on household consumption of various goods and services, the accuracy could have been limited because expenditures on several items are incurred in different time periods (daily, monthly, quarterly, and yearly) and may not be captured accurately in a one month period even if the expenditures are annualised. However, this appears to be the most feasible method. An alternative would be to use expenditure diaries over a longer period of time, but this may not be feasible. Using a rolling survey, so that you get part of the sample from different time periods during the year, might address issues of seasonality.

Another limitation of the study was the fact that our survey did not distinguish between pregnant and non-pregnant women beneficiaries in BIA to allow for a more robust conclusion about whether free services for pregnant women are really free to them. It was also not possible to specifically select people who are enrolled in the NHIS or other health insurance schemes in the study areas so as to investigate whether they are still exposed to high incidence of OOPS and catastrophic costs of healthcare.

Also, there was a limited perspective on FIA as only the FIA of OOPS was undertaken and there was no investigation of incidence of other financing mechanisms such as taxation. The failure to distinguish place of use of public health services, making it hard to know reasons for payment for "free" services was another limitation of the study. This arose from the development of the study tools where provisions were not explicitly made for such disaggregation. Nonetheless, the observed pattern of payments for some of the services provided reasonable evidence for inferring about the net benefits of the services.

Another possible limitation of the study was we only examined the distribution of benefits for a limited range of public health services. Although the information presented is very useful for programmatic purposes, it may not provide a full set of information required by policymakers to have the complete picture about the population groups that benefit from public expenditures. Such comprehensive information will help in holistically ensuring that public expenditures are equitably consumed by different population groups, especially in terms of ensuring vertical equity.

Future research

Future studies should assess the real consequences for households of high levels of health expenditure. Such studies will require qualitative and observational design (Goudge et al., 2009). In computing BIA, future studies should investigate use and cost of public services at different levels of health facility and disaggregate consumption of public subsidies by age-groups and whether women were pregnant or not. This is especially important in the case of immunisation services where different vaccines are given at different times and depending on whether or not a woman is pregnant. These will require more specific unit costs to be used in the computation of benefits. It will also be important to understand whether the

payments for supposedly free public health services are legal or illegal. Future research should also determine the extent that people who are enrolled in the NHIS and or other health insurance schemes are still exposed to OOPS and catastrophic expenditures of healthcare.

Conclusion and recommendations

There was lack of financial risk protection for healthcare in the study area and the worst affected were the rural dwellers and the poorest. OOPS, which was found to be regressive in this study, still dominates as the payment mechanism for healthcare and accounts for the very high level of catastrophic costs that were found in the study. In addition programmatic and policy interventions are needed to address low and inequitable coverage of public health services and possible illegal payments that could have further decreased access to public health services. In order to improve the provision and use of health services, people want increased free public health services, subsidised healthcare and the construction of more public hospitals. Hence, policymakers and programme managers in the two states should institute health reform mechanisms for developing, implementing and scaling-up financial risk protection mechanisms in the two states. The reform should identify constraints impeding the equitable deployment and access of the general population in order to increase coverage of free or subsidised public health services, especially for poor people and rural dwellers.

6. REFERENCES

Akal, A. and Harvey, R., 2001. *The role of health insurance and community financing in funding immunization in developing countries* [pdf] World Health Organization. Available at: < http://www.who.int/immunization_financing/options/en/role_chf.pdf >

Anambra State Ministry of Health, 2004. *Anambra State healthcare financing and community healthcare system*. Proceedings of advocacy workshop, Awka, Nigeria.

Ataguba, J., 2009. Implications of the analysis of financing and benefit incidence in Ghana, South Africa and Tanzania for health insurance policy debates. *7th World congress on Health Economics: harmonizing health and economics*. Beijing, China 12-15 July 2009.

Barat, L.M., Palmer, N., Basu, S., Worrall, E., Hanson, K. and Mills A., 2004. Do malaria control interventions reach the poor? A view through the equity lens. *Am. J. Trop. Med. Hyg,* 71(Suppl 2), pp.174-178.

Bennett, S. and Gilson, L., 2001. *Health financing: designing and implementing pro-poor policies*. London: DFID Health Systems Resource Centre.

Castillo-Riquelme M, McIntyre D and Barnes K., 2008. Household burden of malaria in South Africa and Mozambique: is there a catastrophic impact? *Tropical Medicine and International Health* 13(1), pp.108-122.

Creese, A., 1991. User charges for health care: a review of recent experience. *Health Policy and Planning*, 6, pp.309-319.

Demery, L., 2000. *Benefit incidence: a practitioner's guide*. Washington DC: Poverty and Social Development Group, Africa Region, World Bank.

Feder, J., Moon, M. and Scanlon W., 1987. Medicare reform: nibbling at catastrophic costs. *Health Affairs*, Winter, pp.5-19.

Federal Ministry of Health (FMOH), 2009. *The draft National Strategic Health Development Plan (NSHDP)*. Abuja: FMOH.

Federal Office of Statistics (FOS), 2004a. *Core welfare indicators questionnaire survey: combined 6-states main report*. Abuja, FOS, State Statistical Agencies of Abia, Cross River, Gombe, Kebbi, Osun, and Plateau states. Abuja: FOS, pp.16-20.

Federal Office of Statistics (FOS), 2004b. *Nigeria Living Standard Survey (NLSS) 2003/2004*. Abuja, FOS, European Union, World Bank, Department of International Development, UNDP, pp.35-39.

Filmer D and Pritchett LH., 2001. Estimating wealth effects without expenditure data - or tears: an application to educational enrolments in states of India. *Demography,* 38, pp.115-32.

Garshong, B, Ansah E, Dakpallah G and Huijts I., 2002. A study on factors affecting the implementation of the exemption policy in Ghana. *Bulletin of Health Information*, 1, pp.22-31.

Gertler P and van der Gaag J., 1990. *The willingness to pay for medical care: evidence from two developing countries,* Baltimore: John Hopkins University Press (for the World Bank).

Gottret, P. and Schieber, G., 2006. *Health financing revisited: a practitioner's guide overview*. [pdf] Washington DC: World Bank. Available at: <http://siteresources.worldbank.org/INTHSD/Resources/topics/Health-Financing/HFRFull.pdf >

Goudge, J., Russell, S., Gilson, L., Molyneux, C. and Hanson, K., 2009. Editorial: household experiences of ill-health and risk protection measures. *Journal of International Development*, 21(2), pp.159-168.

Gwatkin, D.R., 2000. Health inequalities and the health of the poor: What do we know? What can we do? *Bulletin of the World Health Organization*, 78, pp.3-17.

Gwatkin, D.R., Rutstein, S., Johnson, K., Suliman, E., Wagstaff, A. and Amouzou, A., 2000a. *Socio-economic differences in health, nutrition and population: Bolivia*. Washington DC: World Bank.

Gwatkin, D.R., Rutstein, S., Johnson, K., Suliman, E., Wagstaff, A. and Amouzou, A., 2000b. *Socio-economic differences in health, nutrition and population: Cote D'Ivoire*. Washington DC: World Bank.

Hanson, K., Goodman C., Lines J., Meek, S., Bradley, D., and Mills A., 2004. *The Economics of Malaria Control Interventions*. Geneva:Global Forum for Health Research.

Ichoku, H.E., Fonta, W. and Onwujekwe, O. 2009. Incidence and intensity of catastrophic healthcare financing and impoverishment due to out-of-pocket payments in southeast Nigeria. *Journal of Insurance and Risk Management*, April.

Ichoku, H.E. and Fonta, W., 2006. The distributive effect of health care financing in Nigeria. *PEP Working Paper, No 2006-17*. Canada: University of Laval.

Jimenez, E., 1987. *Pricing policy in the social sectors: cost recovery for education and health in developing countries*. Baltimore: The Johns Hopkins University Press (for the World Bank).

Jimoh, A., Sofola, O., Petu, A. and Okorosobo, T., 2007. Quantifying the economic burden of malaria in Nigeria using the willingness to pay approach. *Cost Effectiveness and Resource Allocation*, 5(6).

Katchy, A.U., 2003. Strategy and core concepts of the proposed community health systems development project and community health financing in Anambra State. *Paper presented at Anambra State advocacy workshop on community health system and healthcare financing scheme*.

Kirigia, J.M., Preker, A., Carrin, G., Mwikisa, C. and Diarra-Nama AJ., 2006. An overview of health financing patterns and the way forward in the WHO African Region. *East African Medical Journal*, 83(8), S1-S28.

McIntyre, D., 2007. *Learning from experience: health care financing in low and middle-income countries*. Geneva: Global Forum for Health Research.

McIntyre, D., Gilson, L. and Mutyambizi, V., 2005. Promoting equitable health care financing in the African context: current challenges and future prospects. *Equinet Discussion Paper Number 27, October 2005*. Harare: Regional Network for Equity in Health in Southern Africa (EQUINET).

Meerman, J., 1979. *Public expenditure in Malaysia: who benefits and why*. New York: Oxford University Press (for The World Bank).

Meessen, B., Zhenzhong, Z., Van Damme, W., Devadasan, N., Criel, B. and Bloom. G., 2003. Iatrogenic poverty. *Tropical Medicine and International Health*, 8, pp.581-584.

Ministerial Expert Committee (MEC), 2004. *NHIS Review and SWOT Analysis*. Abuja: Federal Ministry of Health.

Mills A., 1991. Exempting the poor: the experience of Thailand. *Social Science and Medicine*; 33(11), pp.1241-52.

Mota, R.E., Lara, A.M., Kunkwenzu, E.D. and Lalloo, D.G., 2009. Health seeking behavior after fever onset in a malaria-endemic area of Malawi. *Am J Trop Med Hyg*, 81(6), pp.935-43.

National Bureau for Statistics (NBS), 2004. *The 2004 National Living Standard Survey (NLSS)*. Abuja: NBS.

Nolan, B. and Turbat, V., 1995. *Cost recovery in public health services in Sub-Saharan Africa*. Washington, DC: Economic Development Institute, World Bank.

O'Donnell, O., van Doorslaer, E., Wagstaff, A. and Lindelow, M., 2007. *Analysing health equity using household survey data: a guide to techniques and their implementation*. Washington DC: World Bank.

O'Donnell O, Eddy van Doorslaer, Ravi P. Rannan-Eliya, Aparnaa Somanathan, Charu C. Garg, Piya Hanvoravongchai, Mohammed N. Huq, Anup Karan, Gabriel M. Leung, Keith Tin and Chitpranee Vasavid., 2005. *EQUITAP Project: Working Paper #5*. Department of Balkan, Slavic and Oriental Studies, University of Macedonia, Greece.

Ogunbekun, I., 2004. *Health Insurance: A Viable Approach to Financing Health Care in Nigeria?* [online] John Snow, Inc. Available at: <http://www.jsi.com/intl/init/inspap.htm>

Ogunbekun, I., Adeyi, O., Wouters, A. and Morrow, R.H., 1996. Costs and financing of improvements in the quality of maternal health services through the Bamako initiative in Nigeria. *Health Policy and Planning*, 11, pp.369-84.

Okeke, T.A. and Okeibunor, J.C., 2010. Rural-urban differences in health-seeking for the treatment of childhood malaria in south-east Nigeria. *Health Policy*, 95(1), pp.62-8.

Okeke, T.A. and Uzochukwu, B.S., 2009. Improving childhood malaria treatment and referral practices by training patent medicine vendors in rural south-east Nigeria. *Malaria Journal*, 20(8), pp.260.

Onwujekwe O, Hanson K, Uzochukwu B, Ichoku H, Ikeh E and Onwughalu C., 2010. Are malaria treatment expenditures catastrophic to different socio-economic and geographic groups and how do they cope with payment in southeast Nigeria? *Tropical Medicine and International Health,* 15 (1), pp.18–25.

Onwujekwe, O., Dike, N., Chukwuka, C., Uzochukwu, B., Onyedum, C., Onoka, C. and Ichoku, H., 2009. Examining catastrophic costs and benefit incidence of subsidized anti-retroviral treatment (ART) programme in south-east Nigeria. *Health Policy*, 90(2), pp.223-229.

Onwujekwe, O., Ojukwu, J., Shu, E. and Uzochukwu, B., 2007. Inequities in valuation of benefits, choice of drugs and mode of payment for malaria treatment services provided by community health workers in Nigeria. *American Journal of Tropical Medicine and Hygiene*, 77(1), pp.16-21.

Onwujekwe, O., 2006. Financing healthcare: a review of existing and potential mechanisms. *Paper presented at workshop on health economics, management and policy for policymakers in the Enugu Health System*. Enugu.

Onwujekwe, O., 2005. Inequities in healthcare seeking in the treatment of communicable endemic diseases in Southeast Nigeria. *Social Science and Medicine.* 61(2), pp.455-63.

Onwujekwe, O., 2004. *Assessing the effects of different financing mechanisms on equity in access to and utilisation of primary healthcare services and exploring strategies for increasing the use of the services by the poor in Nigeria*. Geneva: The Alliance for Health Policy and Systems Research.

Onwujekwe OE*,* Hanson K and Fox-Rushby J., 2004. Inequalities in acquisition of mosquito nets and willingness to pay for Insecticide-treated nets in Nigeria: Threats to successes of malaria control interventions. *Malaria Journal* 2004, 3:6.

Onwujekwe, O., Chima, R.I. and Okonkwo, P.O., 2000. Economic burden of malaria illness versus that of a combination of all other illnesses: a study in five malaria holo-endemic communities. *Health Policy*, 54(2), pp.143-159.

Organisation of African Unity (OAU), 2001. *Abuja declaration on HIV/AIDS, tuberculosis and other related infectious diseases*. Abuja: OAU.

Oxfam, 2009. Blind optimism: challenging the myths about private health care in poor countries. *Oxfam Briefing Paper 125*. London: Oxfam

Palmer, N., Mueller, D., Gilson, L. et al., 2004. Health financing to promote access in low-income settings-how much do we know? *The Lancet*, 364, pp.1365-70.

Pradhan M and Prescott N., 2002. Social risk management options for medical care in Indonesia. *Health Economics* 11, pp.431-436.

Preker, A.S., 2005. *Feasibility of Mandatory Health Insurance - Challenges in Health Care Financing*. Abuja Flagship Courses, Abuja: World Bank.

Preker, A.S., 2004. *Voluntary health insurance in development: review of role in Africa region and other selected developing country experiences, scope of work and terms of reference*. Washington DC: World Bank.

Ranson K., 2002. Reduction of catastrophic healthcare expenditures by a community-based health insurance scheme in Gujarat, India: current experiences and challenges. *Bulletin of the World Health Organization*. 80, pp.613-21.

Russell S.,1996. Ability to pay for health care: concepts and evidence. *Health Policy and Planning* 11 (3), pp. 219-237.

Schellenberg JA, Victora CG, Mushi A, de Savigny D, Schellenberg D, Mshinda H, Bryce J; Tanzania Integrated Management of Childhood Illness MCE Baseline Household Survey Study Group. 2003. Inequities among the very poor: health care for children in rural southern Tanzania. *The Lancet*, 361, pp.561-566.

Schieber, G., Baeza, C., Kress, D. and Maier, M., 2006. Financing Health Systems in the 21st Century. In: D.T. Jamison et al., eds. *Disease Control Priorities in Developing Countries*. 2nd ed. Washington DC: World Bank.

Selowsky, M., 1979. *Who benefits from government expenditures? A case study of Colombia*. New York: Oxford University Press.

Soyibo, A., 2003. *Health sector public expenditure review*. Final report submitted to the National Planning Commission and World Bank, Abuja.

Soyibo A., Lawanson, O. and Olaniyan, L., 2010. *National health accounts of Nigeria*, *2003-2005*. Ibadan: University of Ibadan.

Soyibo A., Lawanson, O. and Olaniyan, L., 2005. *National Health Accounts of Nigeria, 1998-2002*. Final report submitted to World Health Organization, Geneva. Ibadan: University of Ibadan.

STATA manual version 6 (1995 – 1999). Texas: STATA press.

Uzochukwu, B.S.C., Onwujekwe, O.E., Eze, S., Ezuma, N., Obikeze, E.N. and Onoka, C.A., 2009. *Community based health insurance scheme in Anambra State, Nigeria: an analysis of policy development, implementation and equity effects*. London: Consortium for Research on Equitable Health Systems, London School of Hygiene and Tropical Medicine.

Uzochukwu, B.S.C., Onwujekwe, O.E. and Akpala, C.O., 2002. Effect of the Bamako-Initiative drug revolving fund on availability and rational use of essential drugs in primary health care facilities in south-east Nigeria. *Health Policy and Planning*. 17(4), pp.378-383.

Velenyi, E., 2005. *In pursuit of more and better managed funds: policy options to purchase better health for Nigeria: a feasibility study of the National Health Insurance Scheme of Nigeria*. Washington DC: World Bank.

Victora, C.G., Vaughan, J.P., Barros, F.C., Silva, A.C. and Tomasi, E., 2000. Explaining trends in inequities: evidence from Brazilian health studies. *The Lancet*. 356, pp.1093-1098.

Wagstaff A, van Doorslaer E., 2003. Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993-1998. *Health Econ*. 2003 Nov;12(11), pp.921-34.

Wagstaff, A., Van Doorslaer, E. and Paci, P., 1991. On the measurement of inequalities in health. *Social Science and Medicine*, 33, pp.545-557.

Wagstaff, A., Van Doorslaer, E. and Paci, P., 1989. Equity in the finance and delivery of health care: some tentative cross-country comparisons. *Oxford Review of Economics*, 5(1), pp.89-112.

Wolfson, L.J., Gasse, J., Lee-Martin, S., Lydon, P., Magan, A., Tibouti, A., Johns, B., Hutubessy, R., Salama, P. and Okwo-Bele, J., 2008. Estimating the costs of achieving the WHO–UNICEF Global Immunization Vision and Strategy, 2006–2015. *Bulletin of the World Health Organization*, 86(1), pp.27-39.

World Bank, 2003. *World Development Indicators*. Washington DC: World Bank.

World Health Organization (WHO), 2001. *Macroeconomics and health: investing in health for economic development*. Report of the Commission on Macroeconomics and Health. Geneva: WHO.

Xu, K., Evans, D.B., Carrin, G., Aguilar-Rivera, A.M., Musgrove, P. and Evans, T., 2007. Protecting households from catastrophic health spending. *Health Affairs*, 26(4), pp.972-983.

Xu, K., Evans, D., Kawabata,K., Zeramdini,R., Klavus, J. and Murray, C., 2003. Household catastrophic health expenditure: a multi-country analysis. *The Lancet*, 362, pp.111-117.